

B.E CIVIL

Course code ETBS101
Course code ETBS102
Category Basic Science Course

Course Outcomes: The students will learn:

1. To apply differential and integral calculus to improper integrals. Apart from some other applications they will have a basic understanding of Beta and Gamma functions.
2. The fallouts of Rolle's Theorem that is fundamental to application of analysis to Engineering problems.
3. The tool of sequences and series for learning advanced Engineering Mathematics.
4. To deal with vector calculus that are essential in most branches of engineering.
5. The essential tool of matrices and linear algebra in a comprehensive manner.

Course Code ETES103
Category Engineering Science Course

Course Outcomes

1. Able to understand and analyze the basic electric circuits.
2. Acquire knowledge about the principles and operations of Transformers.
3. Acquire knowledge about the principles and working of Electric generators and Motors.
4. Able to understand the characteristics of SCR and process of rectification.
5. Acquire knowledge about the components of low voltage electrical installations and safety practices.

Course Code ETSP105
Category Engineering Science Course

Course Outcomes

1. Get an exposure to common electrical components and their ratings.
2. Make electrical connections by wires of appropriate ratings.
3. Understand the usage of common electrical measuring instruments.
4. Understand the basic characteristics of transformers and electrical machines.
5. Get an exposure to the working of power electronic converters.

Course code ETSP106
Category Engineering Science Courses

Course Outcomes

Upon completion of this course, the students will gain knowledge of the different manufacturing processes which are commonly employed in the industry, to fabricate components using different materials.

Course code

ETHS201

Category

**Humanities and Social Sciences including
Management courses**

Course Outcomes The student will acquire basic proficiency in English including reading and listening comprehension, writing and speaking skills.

Course Code

ETBS202

Category

Basic Science Course

Course Outcomes At the end of the course the student will be able to

1. Develop innovative methods to produce soft water for industrial uses, drinking purpose and understand concept of surface chemistry,
2. study the concept of electrochemistry and its applications and corrosion control methods, understand the properties of fuels and applications of energy storage devices, synthesis and uses of various polymers and gain knowledge on refractories and lubricants,
3. understand the concepts of certain analytical techniques and applications of nanochemistry.

ETES203

Course code

Category

Engineering Science Course

Course Outcomes

The student will learn

1. To formulate simple algorithms for arithmetic and logical problems.
2. To translate the algorithms to programs (in C language).
3. To test and execute the programs and correct syntax and logical errors.
4. To implement conditional branching, iteration and recursion.
5. To decompose a problem into functions and synthesize a complete program using divide and conquer approach.
6. To use arrays, pointers and structures to formulate algorithms and programs.
7. To apply programming to solve matrix addition and multiplication problems and searching and sorting problems.
8. To apply programming to solve simple numerical method problems, namely root finding of function, differentiation of function and simple integration.

Course code

ETBS204

Category

Basic Science Course

Course Outcomes

The objective of this course is to familiarize the prospective engineers with techniques in multivariate integration, ordinary and partial differential equations and complex variables. It aims to equip the students to deal with advanced level of mathematics and applications that would be essential for their disciplines.

The students will learn:

1. The mathematical tools needed in evaluating multiple integrals and their usage.
2. The effective mathematical tools for the solutions of differential equations that model physical processes.
3. The tools of differentiation and integration of functions of a complex variable that are used in various techniques dealing engineering problems.

Course code

ETBP206

Category Basic Science Course

Course outcomes: At the end of the course the students will be able to

1. Gain knowledge in the quantitative chemical analysis of water quality related parameters.
2. Assess the composition of an alloy
3. Analyse the quantitatively the amount of substance present in a given sample by acid-base, permanganometry and iodometry titration.
4. Analyse quantitatively the amount of substance present in a given sample by conductometry and potentiometry

Course code ETSP207

Category Engineering Science
Course

Laboratory Outcomes

1. To formulate the algorithms for simple problems
2. To translate given algorithms to a working and correct program
3. To be able to correct syntax errors as reported by the compilers
4. To be able to identify and correct logical errors encountered at runtime
5. To be able to write iterative as well as recursive programs
6. To be able to represent data in arrays, strings and structures and manipulate them through a program
7. To be able to declare pointers of different types and use them in defining self- referential structures.
8. To be able to create, read and write to and from simple text files.☒

Course code ETSP208

Category Engineering Science
Courses

Course Outcomes

All phases of manufacturing or construction require the conversion of new ideas and design concepts into the basic line language of graphics. Therefore, there are many areas (civil, mechanical, electrical, architectural and industrial) in which the skills of the CAD technicians play major roles in the design and development of new products or construction. Students are prepared for actual work situations through practical training in a new state-of-the-art computer designed CAD laboratory using engineering software.

ETBS301

**ENGINEERING
MATHEMATICS-III**

COURSE OUTCOMES At the end of the course the students will be able to acquire knowledge on

1. Partial differential equations.
2. Fourier series.
3. Fourier transform.
4. Z-transforms and the methods of solving them.
5. Solving boundary value problems.

ETES302

ENVIRONMENTAL STUDIES

COURSE OUTCOMES At the end students can able to:

1. Understand the importance of environment.
2. Analyze the importance of environment in engineering.
3. Apply their own ideas and demonstrate advanced technologies that will be useful to protect environment.
4. Employ awareness among the society about environmental problems and natural disasters.
5. Practice according to the present and future environmental issues.

ETES303

ENGINEERING MECHANICS

COURSE OUTCOMES: At the end, Students can able to

1. Explain the forces and its related laws of mechanics in static and dynamic conditions.
2. Analyse the forces and its motions on particles, rigid bodies and structures.
3. Solve the moment of inertia of any sections and masses for the structural members.
4. Understand the principles of kinetics and dynamics.
5. Understand the concept of particle dynamics in motion.

CEES304

CONSTRUCTION ENGINEERING

COURSE OUTCOMES At the end of the course students will be able to

1. Compare the properties of most common and advanced building materials.
2. Acquire knowledge of testing of construction materials, their strength requirements and applications.
3. Recognize the functions of different building components.
4. Understand the usage of modern building materials and construction equipments.
5. Apply techniques to repair buildings.

CEPC305

INTRODUCTION TO FLUID MECHANICS

COURSE OUTCOMES At the end of the course, the student will be able to:

1. Understand the broad principles of fluid statics, kinematics and dynamics
2. Understand definitions of the basic terms used in fluid mechanics
3. Understand classifications of fluid flow
4. Apply the continuity, momentum and energy principles
5. Apply dimensional analysis

CZPC306**CONCRETE TECHNOLOGY**

COURSE OUTCOMES At the end of the course students will be able to

1. Identify the properties of cement, aggregate and concrete.
2. Acquire knowledge of testing of cement, aggregate and concrete and their strength requirements.
3. Understand the importance of manufacturing process of concrete.
4. Recognize the functions of different concrete admixtures and its types.
5. Understand the concept of concrete mix proportioning.

CESP307**COMPUTER PRACTICAL-BUILDING DRAWINGS**

COURSE OUTCOMES At the end of the course students will be able to

1. Understand conventional symbols used in drawing.
2. Draft plan, elevation and sectional views of doors & windows, lean to roof and different types of buildings.
3. Understand the regulations as per National Building Code.
4. Identify the functional requirements and building rules.
5. Understand and usage of computer tool to draw a plan of various buildings

CECP308**FLUID MECHANICS LABORATORY**

COURSE OUTCOMES At the end of the course students will be able to

1. Determine the rate of flow using various experiments.
2. Study the various losses occurred in different sections
3. Compute forces exerted using impact of jet on different vanes.
4. Develop characteristics curves to determine the specific speed of pumps.
5. Develop characteristics curves to determine the specific speed of turbines.

CZCP309**CONSTRUCTION MATERIALS LABORATORY**

COURSE OUTCOMES The students will have the required knowledge in the area of

1. Behaviour of construction materials
2. Properties of construction materials
3. Properties of construction elements
4. Behaviour of fresh and hardened concrete
5. Mechanical and durable properties of bricks and blocks

CEBS401**PROBABILITY & STATISTICS FOR CIVIL ENGINEERING**

COURSE OUTCOMES The students should be able to

1. Collect data on a problem and describe the data using graphical and descriptive measures; develop a probabilistic model for the problem; perform probability operations and evaluations;
2. Use discrete and continuous random variables to model some aspects of the problem; evaluate the probabilistic characteristics of functions of random variables
3. Perform statistical analyses of the data and hypotheses testing
4. Perform analysis of variance, parameter estimation, confidence-interval selection, and selection of sample sizes

5. Perform correlation and regression analyses for fitting a curve or model to data and formulate algorithms to solve problems

CZES402

INTRODUCTION TO SOLID MECHANICS

COURSE OUTCOMES On completion of the course, the student will be able to:

1. Describe the concepts and principles, understand the theory of elasticity including strain/displacement and Hooke's law relationships; and perform calculations, relative to the strength and stability of structures and mechanical components;
2. Define the characteristics and calculate the magnitude of combined stresses in individual members and complete structures; analyze solid mechanics problems using classical methods and energy methods;
3. Analyse various situations involving structural members subjected to combined stresses by application of Mohr's circle of stress; locate the shear center of thin wall beams
4. Calculate the deflection at any point on a beam subjected to a combination of loads; solve for stresses and deflections of beams under unsymmetrical loading
5. Solve torsion problems in bars and thin walled members.

CEPC403

SURVEYING-I

COURSE OUTCOMES At the end of the course students will be able to

1. Possess knowledge about chain surveying, compass surveying, plane table surveying and Levelling.
2. Gain knowledge about Survey Instruments, their care and adjustments.
3. Use all surveying equipments, prepare LS & CS, contour maps and carryout surveying works related to land and civil engineering projects.
4. Use the levelling concept to produce the contour maps
5. Compute the areas and volumes of earthwork

CEPC404

APPLIED HYDRAULIC ENGINEERING

COURSE OUTCOMES At the end of the course students will be able to

1. Relate the theory and practice of problems in hydraulic engineering.
2. Apply knowledge of fluid mechanics in addressing open channel flow problems.
3. Solve problems in uniform, gradually varied and rapidly varied flows in steady state conditions.
4. Understand the working principle of pumps.
5. Understand the working principle of turbines.

CEPC405

GEOTECHNICAL ENGINEERING

COURSE OUTCOMES On completion of this module, the student must be able to:

1. Understand the different types of soil based on their formation mechanism and relationships of the soil
2. Understand the behaviour of soils based on their moisture contents and classify any soils based on their particle size distribution and index properties;
3. Understand the physical significance of effective stress and its relation with pore pressure.
4. Effect of capillary action and seepage flow direction on the effective stress at a point in the soil mass.
5. Understand the soil characters such as shear strength and stress distribution.

CEPC406**STRENGTH OF MATERIALS**

COURSE OUTCOMES Students will be able to

1. Determine the strain energy and compute the deflection of determinate beams, frames and trusses using energy principles.
2. Analyze propped cantilever, fixed beams and continuous beams using theorem of three moment equation for external loadings and support settlements.
3. find the load carrying capacity of columns and stresses induced in columns and cylinders
4. Determine principal stresses and planes for an element in three dimensional state of stress and study various theories of failure
5. Determine the stresses due to Unsymmetrical bending of beams, locate the shear center, and find the stresses in curved beams

CECP407**SURVEYING LABORATORY-I**

COURSE OUTCOMES At the end of the course students will be able to

1. Possess knowledge on traversing using conventional surveying instruments.
2. Determine the area of the traverse.
3. Find out the inaccessible distance between the points.
4. Determine the difference in elevation and setting the MSL in the various locations.
5. Gain overall knowledge about Survey Instruments, their care and adjustments.

CECP408**HYDRAULIC ENGINEERING LABORATORY**

COURSE OUTCOMES The students will be able to

1. Measure the flow in various sections.
2. Calculate the losses in pipes.
3. Develop the characteristics curves, thus specific speed can be arrived for the rotodynamic and positive displacement pumps .
4. Determine the performance characteristics of turbines
5. Develop the ship model by finding the metacentre.

CECP409**STRENGTH OF MATERIALS LABORATORY**

COURSE OUTCOMES At the end of the course students will be able to

1. Understand the different material properties.
2. Gain knowledge between the stress and strain,
3. Develop the Young's modulus and Poisson's ratio
4. Understand the different loading conditions such as traverse and axial

CEPC501**WATER & WASTEWATER ENGINEERING**

COURSE OUTCOMES At the end of the course students will be able to

1. Apply the main procedures and methods of treatment for wastewater.
2. Develop on Environmental Management Systems.
3. Explain different methodologies for collection and conveyance of wastewater.
4. Examine the physical, chemical and biological characteristics of wastewater.

5. Suggest suitable methods for treatment and disposal.

CEPC502 SURVEYING-II

COURSE OUTCOMES At the end of the course students will be able to

1. Understand the principle and concept of conventional methods
2. Understand the advantages of electronic theodolite over conventional instruments
3. Gain a knowledge on field astronomical survey
4. Gain knowledge on the working principle of Total station and GPS, its components, signal structure and error sources.
5. Understand various GPS surveying methods and processing techniques used in GPS observations.

CEPC503 STRUCTURAL ANALYSIS

COURSE OUTCOMES At the end Students will be able to

1. Analyze the indeterminate structures like beams and frames with different end conditions.
2. Explain the concepts of influence lines and its effects.
3. Analyse the arch structures and suspension cable bridges.
4. Solve the structural problems with different methods of analysis.
5. Solve the problems on trusses and elements

CEPC504 STRUCTURAL CONCRETE DESIGN

COURSE OUTCOMES At the end of the course students will be able to

1. Understand the behaviour of Reinforced Concrete and its design philosophies.
2. Gain knowledge about the rudimentary principles of designing reinforced concrete structural elements as per the existing codes.
3. Learn the stress distribution and flexural shear for different elements
4. Develop the knowledge on designing the columns
5. Learn the designing the footing for various structures

CECP508 SURVEYING LABORATORY-II

COURSE OUTCOMES At the end of the course students will be able to

1. Possess the knowledge to find the horizontal and vertical angle by theodolite surveying
2. To find out the inaccessible distance by theodolite surveying
3. To find out the difference in elevation by tacheometric surveying
4. To find out the gradient between the points
5. Possesses the knowledge of GPS and Total Station

CECP509 STRUCTURAL DESIGN & DETAILING LABORATORY-I

COURSE OUTCOMES At the end of the course the student will be able to

1. Design and draw reinforced concrete Cantilever and Counterfort Retaining Walls

2. Design and draw flat slab as per code provisions
3. Design and draw reinforced concrete and steel bridges
4. Design and draw reinforced concrete and steel water tanks
5. Design and detail the various steel trusses and cantry girders

CEPC601 HIGHWAY ENGINEERING

COURSE OUTCOMES Students will be able to

1. Get knowledge on planning and aligning of highway.
2. Geometric design of highways
3. Design flexible and rigid pavements.
4. Gain knowledge on Highway construction materials, properties, testing methods
5. Understand the concept of pavement management system, evaluation of distress and maintenance of pavements

CEPC602 STRUCTURAL STEEL DESIGN

COURSE OUTCOMES At the end of the course students will be able to

1. Get the fundamental knowledge about the different types of Steel sections available in the market.
2. Know the design of Connections and Different types of members which subjected to Various load conditions.
3. Design of industrial building components.
4. Design of girders and sections for various structural components.
5. Plastic analysis and design

CECP607 HIGHWAY ENGINEERING LABORATORY

COURSE OUTCOMES At the end of the course students will be able to

1. Understand the properties and test procedures of aggregate, bituminous materials, composites and recycled waste products.
2. Know the different types of bituminous pavement construction and its principles
3. Learn the properties of various aggregate used as pavement materials through relevant tests.
4. Know the principles and procedures of testing Concrete.
5. Arive the stability value of bituminous mix.

CECP608 STRUCTURAL DESIGN & DETAILING LABORATORY-II

COURSE OUTCOMES At the end of the course students will be able to

1. Get the fundamental knowledge about the different types of Steel sections available in the market.
2. Know the design of Connections and Different types of members and Various load conditions
3. To design the Industrial steel Buildings
4. To design the Compression and tension members
5. To design the various types of beams

ETHS701 PROFESSIONAL PRACTICES, LAW & ETHICS

COURSE OUTCOMES Upon completion of the course, the student shall be able to

1. Apply ethics in society,
2. Discuss the ethical issues related to engineering
3. Realize the responsibilities and rights in the society.
4. Realize the safety and risk in engineering.
5. Understand the global issues in ethics.

CEPC702 PLANNING & COST EVALUATION

COURSE OUTCOMES Upon completion of the course, the student shall be able to

1. Know the different types of rough estimates.
2. Know the different methods of detailed estimates.
3. Work out the rate for different construction works.
4. Understand the procedure of tenders and contract acts.
5. Gain the knowledge of valuation on lands and buildings.

CECP706 PLANNING & COST EVALUATION LABORATORY

COURSE OUTCOMES Upon completion of the course, the student shall be able to

1. Know the different methods of detailed estimates.
2. Work out the rate for different construction works.
3. Understand the procedure of tenders and contract acts.
4. Gain the knowledge of valuation on lands and buildings.
5. Have a practice of quantity estimation and valuation on site.

CEST707 SEMINAR/INDUSTRIAL TRAINING/SWACHH PRACTICAL

COURSE OUTCOMES Upon completion of the course, the student shall be able to

1. Demonstrate the ability to identify, formulate and solve engineering problems.
2. Demonstrate the skills to use modern engineering tools, software's and equipment to analyze problems.
3. Demonstrate the knowledge of professional and ethical responsibilities.
4. Understand the impact of engineering solutions on the society and also will be aware of contemporary issues.
5. Develop confidence for self education and ability for life-long learning

CEPV803 PROJECT WORK AND VIVA-VOCE

COURSE OUTCOMES

1. On Completion of the project work students will be in a position to take up any challenging practical problems and find solution by formulating proper methodology
2. Carrying out any experimental works on construction planning, water resource planning & management and environmental aspects
3. Understand the modelling, analysis and design concepts related to civil engineering applications.

CEPESCN INTEGRATED WATER RESOURCES MANAGEMENT

COURSE OUTCOMES The students will be able to

1. Understand objectives, principles and evolution of integrated water resources management.
2. Have an idea of contextualizing IWRM
3. Gain knowledge in emerging issues in water management, flood, drought, pollution and poverty.
4. Understand the water resources development in India and wastewater reuse.
5. Gain knowledge on integrated development of water management.

CEPESCN IRRIGATION ENGINEERING

COURSE OUTCOMES Students will be able to

1. Have knowledge and skills on crop water requirements.
2. Understand the methods and management of irrigation.
3. Gain knowledge on types of Impounding structures
4. Understand methods of irrigation including canal irrigation.
5. Get knowledge on water management on optimization of water use.

CEPESCN PRE FABRICATED STRUCTURES

COURSE OUTCOMES At the end of the course, students will be able to

1. Realize the need for prefabrication in construction.
2. Design some of the prefabricated elements
3. Understand the construction techniques involved in building framed structures.
4. Insist on Quality in precast construction.
5. Understand the production, Handling and Erection of Precast Elements

CEPESCN TRAFFIC ENGINEERING & MANAGEMENT

COURSE OUTCOMES At the end of the course students will be able to

1. Understand the concepts of traffic engineering and its characteristics.
2. Perform traffic studies.
3. Explain traffic control and design.
4. Realize the importance of traffic management.
5. Identify the specification of traffic facilities.

CEPESCN ADVANCED CONSTRUCTION TECHNIQUES

COURSE OUTCOMES At the end of the course students will be able to

1. Know the modern construction techniques to be used in the construction of buildings and special structures
2. Understand rehabilitation and strengthening techniques and demolition.
3. Aware of safety precautions in Demolition and Dismantling.
4. Gain a knowledge on retrofitting of structural elements and sub grade water proofing and soil stabilization
5. Understand the demolition techniques by using advanced demolition machines and explosion.

CEPESCN**MEMBRANE TECHNOLOGY**

COURSE OUTCOMES At the end of the course students will be able to

1. Understand the principles of different membrane manufacturing methods.
2. Ability to know which materials are most suitable for membrane separation/purification of various liquid streams depending on the liquid composition and selected process parameters such as temperature and pressure.
3. Gain knowledge of membrane capabilities and constraints in the aspects of Engineering.
4. Develop skills to choose appropriate membrane process for a specific application.
5. Understand the principles and application of reverse osmosis microfiltration and ultra filtration.

CEPESCN**CONSTRUCTION PLANNING & MANAGEMENT**

COURSE OUTCOMES At the end of the course students will be able to

1. Develop the ability to influence project design and to manage pre-construction activities.
2. Understand method of control of project schedule, cost, quality and risks.
3. Realize ethics of project management.
4. Acquire knowledge on Tenders and related procedures.
5. Recognize the significance of safety and health management.

CEPESCN**INDUSTRIAL WASTEWATER ENGINEERING**

COURSE OUTCOMES At the end of the course students will be able to

1. Apply the main procedures and methods of treatment for wastewater.
2. Develop on Environmental Management Systems.
3. Explain different methodologies for collection and conveyance of wastewater.
4. Examine the physical, chemical and biological characteristics of wastewater.
5. Suggest suitable methods for treatment and disposal.

CEPESCN**REMOTE SENSING & GIS**

COURSE OUTCOMES At the end of the course students will be able to

1. Identify the concepts and characteristics of Remote Sensing.
2. Acquire knowledge of appropriate map projection and coordinate systems.
3. Understand GIS, its structure, quality and standards.
4. Get exposure to several applications of RS and GIS in the various fields of Civil engineering especially resource mapping.
5. Apply GIS and LIS techniques to highway alignment, watershed management, Water quality mapping and surface & groundwater resources.

CEPESCN**TRANSPORTATION ENGINEERING**

COURSE OUTCOMES At the end of the course students will be able to

1. Classify the different types of transportation systems.
2. Plan a transport system for urban and rural system
3. Understand the economic evaluation of transportation

4. Plan various public transportation systems
5. Demonstrate various application of intelligent transport system.

CEPESCN ARCHITECTURE

COURSE OUTCOMES At the end of the course students will be able to

1. Recognize the different qualities of Architecture.
2. Understand that Architecture can enhance the building in terms of appearance and utility.
3. Realize that Architectural design can improve comfort in living conditions of buildings.
4. Apply Architectural concept and design buildings according specific requirements.
5. Concept of Institutional Structures

CEPESCN RAILWAYS, AIR PORTS AND HARBOUR ENGINEERING

COURSE OUTCOMES: Students who successfully complete this course will be able to:

1. Understand the methods of route alignment and design elements in Railway Planning and Constructions.
2. Understand the Construction techniques and Maintenance of Track laying and Railway stations.
3. Gain an insight on the planning and site selection of Airport Planning and design.
4. Analyze and design the elements for orientation of runways and passenger facility systems.
5. Understand the various features in Harbours and Ports, their construction, coastal protection works and coastal Regulations to be adopted.

CEPESCN URBAN PLANNING & DEVELOPMENT

COURSE OUTCOMES At the end of the course students will be able to

1. Describe basic issues in urban planning.
2. Formulate plans for Urban and rural development.
3. Plan and analyze socio-economic aspects of Urban and rural planning.
4. Understand functions of local authority with a clear idea of control rules.
5. Understand the concept of rural planning and sanitation.

CEPESCN CLIMATE CHANGE ADAPTATION & MITIGATION

COURSE OUTCOMES At the end of the course students will be able to

1. Understand the earth's climate change and its system classification.
2. Introduce the observed changes in the climate and concept of modelling and Institutional arrangements existing for monitoring the phenomenon.
3. Show the impact of climate change on various sectors and its irreversibility.
4. Prepare the adaptation and mitigation measures of climate change on various sectors.
5. Choose the clean Technology for the Fuel and energy through natural and eco friendly techniques.

M.E in ENVIRONMENTAL ENGINEERING

ENVC101 STATISTICS FOR WATER RESOURCES AND ENVIRONMENTAL ENGINEERS

COURSE OUTCOMES:

At the end of the course students will be able to

1. Recognize that statistical methods are decision-making tools and will view them as a part of a process.
2. Demonstrate different examples to illustrate each statistical method, recognizing that there are a great many possible applications of statistical methods.
3. Explore the use of statistical software and develop microcomputer applications for solving real-time problems in Water Resources Engineering and Environmental Engineering.
4. Realize that the course contains the statistical methods necessary to solve a wide array of real-world problems in Water Resources Engineering and Environmental Engineering.

ENVC102 ENVIRONMENTAL CHEMISTRY AND MICROBIOLOGY

COURSE OUTCOMES:

At the end of the course students will be able to

1. Explain the chemical concepts involved in miscibility of solutions and gases.
2. Determine the water quality parameters like alkalinity, Total hardness and Oxygen demand in sewage and industrial effluents.
3. Suggest suitable qualitative and quantitative analysis of different materials in solid, liquid and gaseous forms.
4. Understand the characteristics and structure of microbes.
5. Isolate and identify different microbes present in various sources.
6. Acquire knowledge on soil, aquatic and air microbiology.

ENVC 103 AIR POLLUTION MONITORING AND CONTROL

COURSE OUTCOMES:

At the end of the course students will be able to

1. Conduct air quality monitoring programme for routine or site specific air quality parameters with conventional as well as modern sensors.
2. Design air pollution control systems.
3. Select the appropriate cost effective control system with high efficiency to be adopted in any type of air polluting industry.

ENVC104 PRINCIPLES AND DESIGN OF PHYSICO-CHEMICAL TREATMENT SYSTEMS

COURSE OUTCOMES:

At the end of the course students will be able to

1. Understand the conceptual theories of physico–chemical treatment and their need.
2. Identify various physico-chemical treatment units with their significance and types.
3. Learn the criteria for adaptation of the physico-chemical treatment with their advantages.
4. Design physico-chemical treatment units for water and wastewater.

ENVP107 ENVIRONMENTAL PROCESS MONITORING LABORATORY – NO Cos

ENVC201 PRINCIPLES AND DESIGN OF BIOLOGICAL TREATMENT SYSTEMS

COURSE OUTCOMES:

At the end of the course students will be able to

1. Learn the principles, theories and significance of biological treatment systems for waste water treatment.
2. Design biological treatment systems for waste water.
3. Develop conceptual schematics required for biological treatment of wastewater.
4. Translate pertinent criteria into biological treatment system requirements.

ENVC 202 SOLID WASTE MANAGEMENT

COURSE OUTCOMES:

At the end of the course students will be able to

1. Understand the present scenario of solid waste management in India, framework and regulatory requirements applicable in India.
2. Gain good knowledge on composition and characterization of waste based on which a recommendation can be made on how to handle the given waste.
3. Demonstrate the concept of waste to wealth.
4. Devise a better strategy to adopt the principle of cradle to grave to dispose waste.
5. Apply knowledge for recycling and reuse of waste in their respective fields.

ENVC 203 INDUSTRIALWASTE MANAGEMENT

COURSE OUTCOMES:

1. Characterize the wastewater generated from a specific industry and understand the possible impacts on the environment.
2. Identify the means and methods to reduce the quantity of generation of wastewater from an industrial premise by performing source reduction techniques and waste audit.
3. Probe the possible recycling and reuse opportunities for the generated wastewater and residuals by employing suitable treatment units.

4. Understand the feasibility and benefits of individual, common and joint treatment of industrial wastewater.

ENVC204 ENVIRONMENTAL IMPACT AND RISK ASSESSMENT

COURSE OUTCOMES:

At the end of the course students will be able to

1. Understand the necessity of the impacts and risks that will be caused by projects or industries and the methods to overcome these impacts.
2. Know about the legal requirements of Environmental Impact and Risk Assessment for projects.
3. Gain good knowledge on environmental impact assessment procedures and techniques adopted in the field.
4. Understand EIA as a technical, social process used for environmental governance.

ENVP207 UNIT OPERATIONS & PROCESS LABORATORY

COURSE OUTCOMES:

1. The students will be getting the training to face the audience and to interact with the audience with confidence.
2. To tackle any problem during group discussion in the corporate interviews.

ENVT303 THESIS PHASE-I

COURSE OUTCOMES

Upon completion of this course, the students will be able to:

1. Take up any challenging practical problems and find solution
2. Learn to adopt systematic and step-by-step problem solving methodology

ENVI304 INDUSTRIAL TRAINING

COURSE OUTCOMES:

1. The students can face the challenges in the practice with confidence.
2. The student will be benefited by the training with managing the situation arises during the execution of works.

ENVT401 THESIS PHASE-II

COURSE OUTCOMES

Upon completion of this course, the students will be able to:

1. Take up any challenging practical problems and find solution.
2. Learn to adopt systematic and step-by-step problem solving methodology.

M.E. (Water Resources Engineering and Management)

WREC 101 STATISTICS FOR WATER RESOURCES AND ENVIRONMENTAL ENGINEERS

COURSE OUTCOMES:

At the end of the course, students will be able to

1. Recognize that statistical methods are decision-making tools and will view them as a part of a process.
2. Use a different example to illustrate each statistical method, the student will recognize that there are a great many possible applications of statistical methods
3. To explore the use of statistical software and develop microcomputer applications for solving real-time problems in Water Resources and Environmental Engineering
4. Overall, at the end of the course, the students will realize that the course contains the statistical methods necessary to solve a wide array of real-world problems in Water Resources and Environmental Engineering.

WREC 102 OPEN CHANNEL HYDRAULICS COURSE OUTCOMES:

At the end of the course, students will be able to

1. Acquire a knowledge of the principles of mechanics of open surface flow of fluids, and able to express these in terms of mathematics;
2. Analyze problems associated with flow of water in streams and canals;
3. Design canals and associated structures;
4. Pursue research in the field of water resources engineering and management.

WREM 103 SURFACE WATER HYDROLOGY

COURSE OUTCOMES:

At the end of the course, students will be able to

1. Obtain the complete knowledge on hydrologic cycle, hydrometeorology and formation of precipitation.
2. Apply the various methods of field measurements and empirical formulae for estimating the various losses of precipitation, stream flow and runoff.
3. Know the various methods of runoff estimation. Apply the knowledge of soil erosion and sedimentation to estimate the life of the reservoir.
4. Understand the aspects of hydraulic and hydrologic flow routing in rivers and channels.

WREC 104 GROUNDWATER HYDROLOGY

COURSE OUTCOMES:

At the end of the course, the student should be able.

1. To evaluate the ground water resources and aquifer parameters for different hydro-geological boundary conditions.
2. To know and apply the techniques of detaining how much groundwater can be safely withdrawn from the aquifers.
3. To understand the different methods of well design, well construction and well maintenance
4. To solve groundwater real life problems and estimate the groundwater potential in the region under consideration.

WREC 201 COMPUTATIONAL METHODS IN WATER RESOURCES ENGINEERING

COURSE OUTCOMES:

At the end of the course, the students will be able to

1. Know the solution procedures of direct and indirect methods for finding the roots of transcendental and polynomial equations and apply them in relevant problems in open channel hydraulics
2. Apply the direct and iterative methods for the solution of a system of linear equations and use them in relevant hydrological applications
3. Have hands on experience in applying numerical differentiation methods for solving flood routing problems
4. Understand the different methods of obtaining numerical solution of differential equations and numerical solution of initial value problems and apply them to relevant hydraulic and hydrological problems.
5. To apply the finite difference methods and finite element methods in solving boundary value problems in groundwater systems planning and management

WREC 202 WATER RESOURCES SYSTEMS ANALYSIS

COURSE OUTCOMES:

At the end of the course, students will be able to

1. Learn the art of systems modeling and analyses
2. Gain the knowledge to make appropriate choices regarding model complexity
3. Develop their skills in the use of quantitative methods of identifying and evaluating effective water resources management plans and policies.
4. Become a skilled water resources systems modeler, analyst and planner through the modelling approaches, examples and case studies they have learnt.

WREC 203 REMOTE SENSING & GIS IN WATER RESOURCES ENGINEERING AND MANAGEMENT

COURSE OUTCOMES:

At the end of the course, students will be able to

1. Apply Remote sensing, GPS and GIS tools to solve the spatial problems in water resources
2. Understand the technology and principles of Satellite Imaging
3. Know the functional explication of GIS and integrating Satellite data products into the GIS platform for decision making
4. Understand the application of Remote Sensing and GIS on solving a host of problems in Water Resources engineering through case studies

WREC 204 WATER DISTRIBUTION NETWORKS

COURSE OUTCOMES:

At the end of the course, students will be able to

1. Understand the basic principles of pipe flow and pipe appurtenances
2. Know the types of water supply systems and water supply networks
3. Apply the analysis of Looped Networks in water supply distribution and Pipe network analysis of single-input and multi-input sources to meet water demand at various withdrawal points
4. Use Computer software packages for Water distribution network analysis

WRES208 SEMINAR

COURSE OUTCOMES:

1. The students will be getting the training to face the audience and to interact with the audience with confidence.
2. To tackle any problem during group discussion in the corporate interviews.

WRET303 THESIS PHASE-I

COURSE OUTCOMES

Upon completion of this course, the students will be able to:

1. Take up any challenging practical problems and find solution.
2. Learn to adopt systematic and step-by-step problem solving methodology.

WREI304 INDUSTRIAL TRAINING

COURSE OUTCOMES:

1. The students can face the challenges in the practice with confidence.
2. The student will be benefited by the training with managing the situation arises during the execution of works.

WRET401 THESIS PHASE-II

COURSE OUTCOMES

Upon completion of this course, the students will be able to:

3. Take up any challenging practical problems and find solution.
4. Learn to adopt systematic and step-by-step problem solving methodology.