



**CHAITANYA BHARATHI
INSTITUTE OF TECHNOLOGY (A)**

Kokapet(Village), Gandipet, Hyderabad, Telangana-500075. www.cb.it.ac.in



Programs Accredited by



Approved by



Accredited in



All India 1000 Rank



ISO Certified



COMMITTED TO
RESEARCH,
INNOVATION AND
EDUCATION

44
years

DEPARTMENT OF CIVIL ENGINEERING

B.E. Program Outcomes (PO's)

Engineering Knowledge: Apply the knowledge of mathematics, science, engineering fundamentals and an engineering specialization for the solution of complex engineering problems
Problem analysis: Identify, formulate, research literature, and analyse complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for public health and safety, and cultural, societal, and environmental considerations.

Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools, including prediction and modelling to complex engineering activities, with an understanding of the limitations.

The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal, and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

Communication: Communicate effectively on complex engineering activities with the engineering community and with the society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

Life-long learning: Recognise the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.


PROFESSOR & HEAD
Department of Civil Engineering
Chaitanya Bharathi Institute of Technology
GANDIPET, HYDERABAD-5000 075

R20 DEPARTMENT VISION AND MISSION

Vision

To strive for excellence in academics, research and consultancy in the field of Civil Engineering and contribute to the sustainable development of the country by producing quality Civil Engineers with professional and ethical values.

Mission

- Maintaining high academic standards to develop analytical thinking and independent judgment among the students so that they are fit for industry and higher studies.
- Promoting skills and values among the students to prepare them as responsible global citizens who can solve complex problems.
- Preparing the students as good individuals and team members with professional attitude, ethics, concern for environment and zeal for lifelong learning who can contribute to society.

PROGRAM EDUCATIONAL OBJECTIVES:

The PEOs are to facilitate the graduating students to

PEO1: Acquire basic knowledge and expertise necessary for professional practice in Civil Engineering for higher studies and research.

PEO2: Attain and practice technical skills to identify, analyze and solve complex problems and issues related to Civil Engineering.

PEO3: Possess a professional attitude as an individual or a team member to work for the betterment of the society and environment.

PEO4: Work with professional ethics as refined technocrats with a thirst for lifelong learning.

PROGRAM SPECIFIC OUTCOMES:

The graduates of this program will:

1. Effectively apply engineering fundamentals for the development and management of eco-friendly Civil engineering systems which benefit the society at large.
2. Develop the ability to provide solutions to complex problems in civil engineering through individual and team work with a spirit for lifelong learning
3. Develop the competence to plan, build and maintain sustainable infrastructural facilities like housing, water management, transportation and geotechnical services.



PROFESSOR & HEAD
Department of Civil Engineering
Chaitanya Bharathi Institute of Technology
GANDIPET, HYDERABAD-5000 075

R18 DEPARTMENT VISION AND MISSION

Vision

To strive for excellence in academics, research and consultancy in the field of Civil Engineering and contribute to the sustainable development of the country by producing quality Civil Engineers with professional and ethical values.

Mission

- Maintaining high academic standards to develop analytical thinking and independent judgment among the students so that they are fit for industry and higher studies.
- Promoting skills and values among the students to prepare them as responsible global citizens who can solve complex problems.
- Preparing the students as good individuals and team members with professional attitude, ethics, concern for environment and zeal for lifelong learning who can contribute to society.

PROGRAM EDUCATIONAL OBJECTIVES:

The PEOs are to facilitate the graduating students to

PEO1: Acquire basic knowledge and expertise necessary for professional practice in Civil Engineering for higher studies and research.

PEO2: Attain and practice technical skills to identify, analyze and solve complex problems and issues related to Civil Engineering.

PEO3: Possess a professional attitude as an individual or a team member to work for the betterment of the society and environment.

PEO4: Work with professional ethics as refined technocrats with a thirst for lifelong learning.

PROGRAM SPECIFIC OUTCOMES:

The graduates of this program will:

1. Effectively apply engineering fundamentals for the development and management of eco-friendly Civil engineering systems which benefit the society at large.
2. Develop the ability to provide solutions to complex problems in civil engineering through individual and team work with a spirit for lifelong learning
3. Develop the competence to plan, build and maintain sustainable infrastructural facilities like housing, water management, transportation and geotechnical services.


PROFESSOR & HEAD
Department of Civil Engineering
Kenya Biondi Institute of Technology
DIPET, W/BERABAD-5000 075

R16 DEPARTMENT VISION AND MISSION

Vision

To become and stay as a centre of excellence in the field of Civil Engineering and contribute for the building up of better living environment and Infrastructural facilities and protection of natural resources

Mission

1. To adopt, monitor and maintain qualitative teaching – learning process
2. To maintain qualitative teaching, non-teaching and supporting staff
3. To establish laboratories with state-of-the-art equipment and facilities to meet the academic, research and consultancy needs
4. To develop strong linkage with relevant industries, institutes of higher learning and reputed research organizations
5. To contribute for the society by producing qualitative civil engineering graduates and also by conducting service-oriented training and development programmes

PROGRAM EDUCATIONAL OBJECTIVES:

PEO1: To prepare the graduates fit for employment in Civil Engineering related jobs in Government and Private sectors and also to enable them pursue higher studies in the Civil Engineering related specializations.

PEO2: To enable the graduates develop core competence in the field of civil Engineering.

PEO3: To make the graduates attain the ability to apply the concepts of Civil engineering to practical and field problems.

PEO4: To help the graduates acquire professional knowledge, practice professional values and develop themselves into useful Civil Engineering professionals.

PEO5: To facilitate the graduates nurture interest in relating the concepts of Civil Engineering to the society and environment, solve the problem, facing the challenges in the form of new problems and learning new things.

PROGRAM SPECIFIC OUTCOMES:

PSO1: Apply the fundamental knowledge of Civil Engineering to simple and complex problems related to all sub-disciplines

PSO2: Analyze, design and develop Civil Engineering Structures with due consideration for environment safety and sustainability.

PSO3: Take up professional and social responsibilities relevant to Civil Engineering practices and norms.

PSO4: Carryout Research and Consultancy in the field of Civil Engineering making use of the latest technological developments.


PROFESSOR & HEAD
Department of Civil Engineering
Chaitanya Bharathi Institute of Technology
GANAPET, HYDERABAD-5000 075

Sr. No.	Course Code	Course Name	Course Outcome Statements
1	20MT C05	Calculus	<p>Apply the Matrix Methods to solve system of linear equations.</p> <p>Analyse the geometrical interpretation of Mean value theorems.</p> <p>Determine the extreme values of functions of two variables.</p> <p>Examine the convergence and divergence of infinite Series</p> <p>Calculate the Euler's coefficients for Fourier series of a function.</p>
2	20CY C01	Chemistry	<p>Identify the microscopic chemistry in terms of molecular orbitals, intermolecular forces and rate of chemical reactions.</p> <p>Discuss the properties and processes using thermodynamic functions, electrochemical cells and their role in batteries and fuel cells.</p> <p>Illustrate the major chemical reactions that are used in the synthesis of organic molecules.</p> <p>Classify the various methods used in treatment of water for domestic and industrial use.</p> <p>Outline the synthesis of various Engineering materials & Drugs.</p>
3	20CE C01	Engineering Mechanics – I	<p>Calculate the components and resultant of coplanar forces system</p> <p>Understand free body diagram and apply equilibrium equations to solve for unknown forces.</p> <p>Apply concepts of friction for solving engineering problems.</p> <p>Analyse simple trusses for forces in various members of a truss.</p> <p>Determine centroid for elementary, composite figures and bodies.</p>
4	20CS C01	Programming For Problem Solving	<p>Identify and understand the computing environments for scientific and mathematical problems.</p> <p>Formulate solutions to problems with alternate approaches and represent them using algorithms / Flowcharts.</p> <p>Choose data types and control structures to solve mathematical and scientific problem.</p> <p>Decompose a problem into modules and use functions to implement the modules</p> <p>Apply arrays, pointers, structures, and unions to solve mathematical and scientific problems</p> <p>Develop applications using file I/O.</p>
5	20CY C02	Chemistry Lab	<p>Identify the basic chemical methods to analyse the substances quantitatively & qualitatively.</p> <p>Estimate the amount of chemical substances by volumetric analysis.</p> <p>Determine the rate constants of reactions from concentration of reactants/ products as a function of time.</p> <p>Calculate the concentration and amount of various substances using instrumental techniques.</p>


PROFESSOR & HEAD
 Department of Civil Engineering
 Chaitanya Bharathi Institute of Technology
 DIPET, HYDERABAD-5000 075


			Develop the basic drug molecules and polymeric compounds.
6	20CS C02	Programming For Problem Solving Lab	Identify and setup program development environment.
			Design and test programs to solve mathematical and scientific problems.
			Identify and rectify the syntax errors and debug program for semantic errors
			Implement modular programs using functions.
			Represent data in arrays, pointers, structures and manipulate them through a program.
			Create, read, and write to and from simple text files.
7	20ME C02	Workshop / Manufacturing Practice	Understand safety measures to be followed in workshop to avoid accidents
			Identify various tools used in fitting, carpentry, tin smithy, house wiring, welding, casting and machining processes.
			Make a given model by using workshop trades including fitting, carpentry, tinsmithy and House wiring.
			Perform various operations in welding, machining and casting processes
			Conceptualize and produce simple device/mechanism of their choice.
8	20ME C03	Engineering Exploration	Understand the role of an engineer as a problem solver
			Identify multi-disciplinary approaches in solving an engineering problem.
			Build simple systems using engineering design process.
			Analyze engineering solutions from ethical and sustainability perspectives.
			Use basics of engineering project management skills in doing projects.
9	20MT C06	Vector Calculus And Differential Equations	Calculate the areas and volumes.
			Apply the vector differential operators to Scalars and Vector functions
			Solve line, surface & volume integrals by Greens, Gauss and Stoke's theorems
			Calculate the solutions of first order linear differential equations.
			Solve higher order linear differential equations.
10	20 EG C01	English	Illustrate the nature, process and types of communication and communicate effectively without barriers.
			Construct and compose coherent paragraphs, emails and adhering to appropriate mobile etiquette.
			Apply techniques of precision to write a précis and formal letters by using acceptable grammar and appropriate vocabulary.
			Distinguish formal from informal reports and demonstrate advanced writing skills by drafting formal reports.
			Critique passages by applying effective reading techniques


PROFESSOR & HEAD
 Department of Civil Engineering
 Chaitanya Bharathi Institute of Technology
 P. O. Box No. 107, HYDERABAD-500 075

11	20PY C05	Mechanics And Materials Science	Compare the various types of oscillations
			Demonstrate rotational motion of rigid body
			Classify different types of crystals and their imperfections
			Identify magnetic and dielectric materials for engineering applications
			Make use of lasers and superconductors in technological applications
12	20CE C02	Engineering Mechanics - II	determine moment of inertia for plane areas and mass moment of inertia of bodies
			analyse the rectilinear and curvilinear translations of particles.
			solve kinetics problems for particles and connected bodies using dynamic equilibrium equations.
			apply work-energy principle for particles and connected bodies.
			apply linear impulse momentum principle for the motion of bodies and understand concept of simple harmonic motion and its applications
13	20EEC01	Basic Electrical Engineering	Understand the concepts of Kirchhoff's laws and to apply them in superposition, Thevenin's and Norton's theorems to get the solution of simple dc circuits
			Obtain the steady state response of RLC circuits with AC input and to acquire the basics, relationship between voltage and current in three phase circuits.
			Understand the principle of operation, the emf and torque equations and classification of AC and DC machines
			Explain various tests and speed control methods to determine the characteristic of DC and AC machines
			Acquire the knowledge of electrical wiring, types of wires, cables used and Electrical safety precautions to be followed in electrical installations.
			Recognize importance of earthing, methods of earthing and various low-tension switchgear used in electrical installations
14	20EG C02	English Lab	Define the speech sounds in English and understand the nuances of pronunciation in English
			Apply stress correctly and speak with the proper tone, intonation and rhythm.
			Analyze IELTS and TOEFL listening comprehension texts to enhance their listening skills.
			Determine the context and speak appropriately in various situations.
			Design and present effective posters while working in teams, and discuss and participate in Group discussions
15	20PY C08	Mechanics And Materials Sciencelab	Estimate the error in an experimental measurement
			Make use of lasers and optical fibers in engineering applications
			Recall the physical properties of dielectrics and magnetic materials


PROFESSOR & HEAD
 Department of Civil Engineering
 Chaitanya Bharathi Institute of Technology
 TEL. HYDERABAD-5000 07


			Find the mechanical properties of solids and viscosity of liquids
			Demonstrate the motion of electrons in electric and magnetic fields
16	20EE C02	Basic Electrical Engineering Lab	Get an exposure to common electrical components, their ratings and basic electrical measuring equipment.
			Make electrical connections by wires of appropriate ratings and able to measure electric power and energy.
			Comprehend the circuit analysis techniques using various circuit laws and theorems.
			Determine the parameters of the given coil and calculate the time response of RL & RC series circuits.
			Recognize the basic characteristics of transformer and components of switchgear.
			Understand the basic characteristics of dc and ac machine by conducting different types of tests on them.
17	20MBC02	Community Engagement	Gain an understanding of Rural life, Culture and Social realities.
			Develop a sense of empathy and bonds of mutuality with Local Communities.
			Appreciate significant contributions of Local communities to Indian Society and Economy
			Exhibit the knowledge of Rural Institutions and contributing to Community's Socio-Economic improvements
			Utilise the opportunities provided by Rural Development Programmes.
18	20MT C08	Partial Differential Equations And Statistics	Find solution of initial value problems of ODE by Numerical Method
			Solve Linear and Non-Linear PDE's
			Solve One-Dimension Wave and Heat equations and Two Dimension Laplace equation
			Use the basic probability for fitting the Random phenomenon
			Analyze the random fluctuations of probability distribution and Principles of Least Squares approximations for the given data.
19	20CE C03	Surveying I	To select basic surveying instruments such as chains, tapes etc., to measure areas.
			To apply the principles of levelling and prepare contour maps to estimate volumes of earthwork using Simpsons and/or trapezoidal rules.
			To apply the principles of tacheometry on the field
			To operate modern instruments like Total Station and GPS in the field
			To make use of principles of trigonometric levelling for measuring elevations of required objects
20	20CE C04	Solid Mechanics	Evaluate the strength of various materials, against structural actions such as compression, tension.
			To analyze statically determinate beams and sketch SFD and


PROFESSOR & HEAD
 Department of Civil Engineering
 Chaitanya Bharathi Institute of Technology
 GANDIPET, HYDERABAD-5000 075

			BMD. Able to draw variation of shear and bending stresses Able to evaluate direct and bending stresses, compound stresses To design thin and thick cylinders for resisting internal and external pressures.
21	20CE C05	Fluid Mechanics	To evaluate the various properties of fluid, analyse fluid flow and forces. To apply the various laws and principles governing fluid flow to practical problems. To measure pressure, velocity and discharge of fluid flow in pipes, channels, and tanks. To apply laws related to laminar and turbulent flow in pipes. To evaluate water hammer effect in pipes and to apply dimensional and model laws to fluid flow applications.
22	20CE C06	Building Construction Practice & Concrete Technology	To identify the traditional building materials and select suitable type for given situation To determine the properties of the ingredients of concrete and adjudge their suitability. To know various properties of fresh and hardened concrete. To know the concepts of building planning and various practices adopted and different types of roofs, doors, windows and stairs. To know different types of masonry, types of bonds used in construction of walls of buildings.
23	20EG M03	Universal Human Values-ii: Understanding Harmony	Students are expected to become more aware of themselves, and their surroundings (family, society, nature) They would become more responsible in life, and in handling problems with sustainable solutions, while keeping human relationships and human nature in mind. They would have better critical ability. They would also become sensitive to their commitment towards what they have understood (human values, human relationship and human society) It is hoped that they would be able to apply what they have learnt to their own self in different day-to-day settings in real life, at least a beginning would be made in this direction.
24	20CE C07	Solid Mechanics Lab	To understand the stress strain behavior of mild steel bar under direct tension To compute the modulus of elasticity of given materials by conducting deflection tests on different types of beams. To determine the impact/ shear strength of steel specimen. To determine the rigidity modulus of a given material by conducting torsion test and deflection test on helical spring To determine the compressive strength of brick and concrete cube.
25	20CEC08	Fluid	Ability to find the co-efficient of discharge for flows through


PROFESSOR & HEAD
 Department of Civil Engineering
 Anna University Institute of Technology
 Anna University - 600 075


		Mechanics Lab	<p>various flow measuring devices</p> <p>To differentiate between laminar and turbulent flows and identify the governing parameters for both.</p> <p>Applies the concept of Bernoulli's energy principle.</p> <p>Applies the concept of hydrostatic forces on flat and curved surfaces.</p> <p>Ability to find the stability and metacentre of floating body.</p> <p>.To differentiate between viscous and non-viscous flows and identify the governing parameters for both.</p>
26	20CE C09	Hydraulic Engineering	<p>Apply the concepts of open channel flow and design the efficient channel cross section.</p> <p>Apply the concepts of non-uniform open channel flow to the field problems:</p> <p>Interpret the basics of computation of drag and lift forces in the field of aerodynamics, boundary layer effect.</p> <p>Design the impulse turbines, run the turbines under efficient conditions.</p> <p>Design the reaction turbines, draw characteristic curves of turbines and centrifugal pump</p>
27	20CE C10	Surveying II	<p>To execute setting of simple and compound curves on the field by overcoming obstructions in curve ranging</p> <p>To select suitable transition curves based on real world conditions and execute it on field</p> <p>To apply the concepts of photogrammetry for solving problems in civil engineering</p> <p>To choose appropriate remote sensing technique for data acquisition and image processing techniques for identification of ground features accurately</p> <p>To be able to adjust the errors that are cropping while carrying surveying and adopt LiDAR survey for acquiring topographic data at high speed.</p>
28	20CE C11	Structural Analysis-I	<p>Compute slopes and deflections in determinate beams, under various types of static loads, using a suitable method.</p> <p>Analyze the propped cantilevers and fixed beams subjected to various types of loads.</p> <p>Analyze and design circular shafts subjected a given torque and bending.</p> <p>To determine the strain energy in members under various loading situations, and to analyze various types of springs</p> <p>Analyze various types of columns with different end conditions</p>
29	20CE C12	Reinforced Concrete Design - I	<p>Use and suggest Reinforced concrete for various practical applications, interpret the clauses of IS:456 and apply the working stress method of design for rectangular beams.</p> <p>Design RC beams of rectangular and flanged sections/ for flexure using limit state method and check for serviceability.</p> <p>Design RC beams for shear, torsion and bond.</p> <p>Analyse and design solid rectangular RC slabs of one way</p>


PROFESSOR & HEAD
 Department of Civil Engineering
 Chaitanya Bharathi Institute of Technology
 GANDIPET, HYDERABAD-5000 075

			(cantilever, simply supported and continuous) and two way (simply supported and continuous).
			Design RC short columns for axial loads and moments and axially loaded isolated footings.
30	20CE E01	Green Building Technologies	Be able to identify the fundamentals of energy use and energy processes in building.
			Be able to identify the energy requirement and its management.
			Apply the knowledge about Sun-earth relationship vis-a-vis its effect on climate.
			Be able to deal with the end-use energy requirements.
			Be familiar with the audit procedures of energy
31	20CE E02	Principles Of Geographical Information System	Is able to apply the principles of GIS to various field problems and take decisions under uncertain conditions.
			Is able to understand advantages and disadvantages of using vector GIS and raster GIS.
			.Is able to apply the methods of data Compression using GIS.
			Can perform the data modeling and analysis using GIS.
			Is able to apply the Cartographic modelling techniques for Watershed modeling, Environmental Modeling and for Watershed Management, visibility analysis..
32	20CE E03	Solid And Hazardous Waste Management	Characterize the solid waste according to the legislations
			Apply the steps in waste reduction at source, collection techniques, resource recovery/recycling, transport and disposal options.
			Characterize the hazardous waste and decide on transport methods of the same
			Select the site for disposal of hazardous waste and suggest remediation measures for disposal sites
			Apply various legislations pertaining to hazardous waste management according to the situations.
33	20CE E04	Ground Water Engineering	Assess groundwater potential and head
			Estimate hydraulic conductivity and storage coefficient for time variant flow.
			Investigate groundwater availability for a given area.
			Plan and design artificial recharge.
			Construct a model and analyze groundwater flow.
34	20CE C13	Computer Aided Civil Engineering Drafting	Create basic 2D geometry shapes
			Draft elevation and sections of doors and windows.
			Develop plan, section and elevations of buildings.
			Draft plan and section of a staircase.
			Draft RCC detailing of beams and footings.
35	20CE C14	Hydraulic Engineering Lab	To compute the open channel rugosity coefficient in uniform flows and Froude number, energy losses in nonuniform flows
			To differentiate between uniform, non-uniform flows and flow


PROFESSOR & HEAD
 Department of Civil Engineering
 Chaitanya Bherathi Institute of Technology
 MIDIPET, HYDERABAD-5000 075

			in curved channel. To determine work done by fluid jet on vane, compute work done and draw performance characteristic curves for turbines and centrifugal pumps. To determine the coefficient of discharge of a venturi flume.
36	20CE C15	Surveying And Geomatics Lab	To use simple as well as modern surveying instruments. To develop L.S and C.S for road works, Canal works, using Auto levels and to develop contour map of the given area To use Total Station for locating ground details and plotting. To set simple curves using Total Station. To locate ground features using GPS.
37	20EG M01	Indian Constitution And Fundamental Principles	Understand the making of the Indian Constitution and its features. Identify the difference among Right To equality, Right To freedom and Right to Liberty Analyze the structuring of the Indian Union and differentiate the powers between Union and States. Distinguish between the functioning of Lok Sabha and Rajya Sabha while appreciating the importance of Judiciary. Differentiate between the functions underlying Municipalities, Panchayats and Co-operative Societies.
38	20EGM02	Indian Traditional Knowledge	Understand philosophy of Indian culture Distinguish the Indian languages and literature Learn the philosophy of ancient, medieval and modern India Acquire the information about the fine arts in India Know the contribution of scientists of different eras.
39	20 CE M01	Environmental Science	Identify the natural resources and realise the importance of water, food, forest, mineral, energy, land resources and affects of over utilisation. Understand the concept of ecosystems and realise the importance of interlinking of food chains. Contribute for the conservation of bio-diversity. Suggest suitable remedial measure for the problems of environmental pollution and contribute for the framing of legislation for protection of environment. Follow the environmental ethics and contribute to the mitigation and management of environmental disasters.
40	20CE C16	Transportation Engineering	Understand the types of highways, patterns, master plans, alignment finalization and components of highway projects. Apply various IRC Standards for the Geometric design of highways. Organize collection of traffic related data and analyzing the data for different applications Apply the design concepts to flexible and rigid pavements as per IRC standards.


PROFESSOR & HEAD
 Department of Civil Engineering
 Chaitanya Bharathi Institute of Technology
 GANDIPET, HYDERABAD-5000 075

			Execute construction of pavements as per IRC standards and evaluate of pavement condition to recommend suitable remedial measures.
41	20CE C17	Geotechnical Engineering	Identify various types of soils and determine their properties.
			Estimate coefficient of permeability, stresses in soils under various soil conditions and compute discharge in soil.
			Modify the properties of soil by using various compaction methods and compute the settlement of compressible soils.
			Estimate the shear strength of different soils under various loading conditions.
			Evaluate earth pressures and slope stability under different field conditions.
42	20CE C18	Structural Analysis – II	Develop the ILD's for reactions, shear force and bending moment at a section, determine the maximum SF and BM for various positions of the moving point loads and uniformly distributed loads.
			Construct the ILD's for forces in the members of trusses and evaluate the maximum forces for various positions of the moving point loads and uniformly distributed loads.
			Apply slope – deflection method for indeterminate beams with and without sinking of supports subjected to point loads and udl on the entire span and analyse rigid jointed plane frames with and without lateral sway using slope deflection method.
			Apply moment distribution method for indeterminate beams with and without sinking of supports subjected to point loads and udl on the entire span and analyse rigid jointed plane frames with and without lateral sway using moment distribution method.
			Apply matrix, flexibility and stiffness method to continuous beams.
43	20CE C19	Design Of Steel Structures - I	Understand the material properties, loads and design philosophies, design bolted and welded connections.
			Know, how yielding & buckling takes place, design simple and built-up compression members and column bases
			Understand the modes of failure of tension members ,design tension members using limit state method ,design tension and compression members using working stress method as per IS: 800-2007
			Classify structural steel sections, distinguish between laterally supported and laterally unsupported beams, design simple flexural members including secondary considerations
			Estimate the loads on roof trusses and design purlins and members of trusses
44	20CE C20	Transportation Engineering Lab	Conduct various tests on bitumen, define its quality and decide its suitability for its use in pavements.
			Conduct various tests on aggregates, define its quality and decide its suitability for its use in roads.
			Organize various traffic studies and analyze the data by applying statistical tools.


PROFESSOR & HEAD
 Department of Civil Engineering
 Chhatrapati Shivaji Maharaj Institute of Technology
 PUNE-411 005

			Prepare representative samples for various tests on aggregates.
			Generate technical report based on the studies carried in the laboratory and field studies.
45	20CE C21	Geotechnical Engineering Lab	Identify soils with reference to their characteristics.
			Evaluate and classify soils according to IS classification.
			Calculate seepage volume for different soils.
			Examine methods to improve soil stability of soils.
			Conduct tests according to IS laboratory standards and procedures
46	20CE E05	Application Of Artificial Intelligence In Civil Engineering	Recall fundamental knowledge on artificial intelligence.
			Understand neural networks and their types and apply neural networks in the domain of civil engineering.
			Understand and apply fuzzy controllers to solve real-world civil engineering problems.
			Explain basic concepts of support vector machines and choose appropriate techniques relevant to civil engineering.
			Develop a regression models for civil engineering problems.
47	20CE E06	Prestressed Concrete	Understand the general mechanism of pre stressed concrete members, types of pre stressing
			Analyze and understand the behaviour of pre stressed concrete beams.
			Identify and apply design concepts for the pre stressed concrete beams under flexure and shear.
			Analyze the stresses in anchorage zones and design the end anchorages.
			Understand the fundamental concepts of primary and secondary moments in continuous beams.
48	20CE E07	Hazards And Management	Identify and understand the fundamental terminologies in disaster management.
			Distinguish between the Hydro-meteorological disasters and apply the concepts of structural and non- structural mitigation measures.
			Categorize different Geographical Disasters and apply the knowledge in utilizing the early warning systems.
			Analyze various mechanisms and consequences of human induced disasters.
			Develop an awareness of disaster management phases and formulating effective disaster management plans, ability to understand various participatory roles of stakeholders- Central and State Government bodies at different levels.
49	20CE E08	Design Of Masonry Structures	Explain engineering properties, uses of masonry units, defects, crack in masonry and its remedial measures and factors affecting compressive strength of masonry units.


PROFESSOR & HEAD
 Department of Civil Engineering
 Chaitanya Bharathi Institute of Technology
 GANDIPET, HYDERABAD-5000 075

			<p>Explain the different masonry elements, permissible stresses, design considerations and criteria as per IS: 1905 and SP-20.</p> <p>Design different types of masonry walls subjected to axial loads ; UDL and concentrated axial loads.</p> <p>Design different types of masonry walls subjected to eccentric loads, lateral loads and transverse loads</p> <p>Design infill walls of frames and implement the design principles and detailing aspects to ensure seismic safety of unreinforced and reinforced masonry walls</p>
50	20EE O02	Energy Management Systems	<p>Know the current Energy Scenario and importance of Energy Conservation.</p> <p>Understand the concepts of Energy Management, Energy Auditing.</p> <p>Interpret the Energy Management methodology, Energy security and Energy Strategy .</p> <p>Identify the importance of Energy Efficiency for Engineers and explore the methods of improving Energy Efficiency in mechanical systems, Electrical Engineering systems</p> <p>Illustrate the Energy Efficient Technologies in Civil and Chemical engineering systems</p>
51	20ME O12	3d Printing	<p>Understand the concept of 3D printing processes, advantages and limitations.</p> <p>Evaluate real-life scenarios and recommend the appropriate 3D printing technology.</p> <p>Analyze various pre-processing and post processing techniques.</p> <p>Explain current and emerging 3D printing technologies in diversified applications.</p> <p>Identify components required in construction of 3D printer.</p>
52	20CE C22	Hydrology And Water Resources Engineering	<p>Understand the interaction among various processes in the hydrologic cycle and Rain Gauge networks.</p> <p>Analyze hydrograph and different irrigation efficiencies.</p> <p>Estimate different aquifer parameters, yield of an open well, yield and life of a reservoir.</p> <p>Design lined and unlined canals using Kennedy's and Lacey's theory</p> <p>Design gravity dams, earth dams and understand the functioning of spillways.</p>
53	20CE C23	Estimation Specifications And Costing	<p>Prepare detailed estimates for load bearing and RCC framed building using long and short wall method.</p> <p>Prepare detailed estimates for load bearing and RCC framed building using centre line method.</p> <p>Prepare the detailed estimate of steel qualities and bar bending schedule for RCC framed works.</p>


PROFESSOR & HEAD
 Department of Civil Engineering
 Chaitanya Bharathi Institute of Technology
 T.P.E.T, HYDERABAD-5000 075

			<p>Estimate the earth work for – bituminous roads, WBM roads, CC roads, irrigation canals and prepare the detailed estimate of single cell rectangular box culvert, septic tank.</p> <p>Do the rate analysis for different items of works of buildings and understand the general and detailed specifications of works.</p>
54	20CE C24	Reinforced Concrete Design-Ii	<p>Develop the plan layout, design and detail rectangular & trapezoidal combined footings.</p> <p>Analyze for stability, design, the various components and detail cantilever and counter fort type retaining walls.</p> <p>Interpret the specifications from relevant codes, determine the design forces, design various components and detail rectangular and circular water tanks including Intze tanks</p> <p>Understand the clauses from relevant IRC codes, design and detail the various components of Solid slab bridge.</p> <p>Analyze the slab panels using effective width method/ Pigeaud's curves, girders using Courbon's method and design & detail the various components of T-Beam bridges.</p>
55	20CE C25	Environmental Engineering	<p>Identify an appropriate population forecasting method and estimate quantity of water to be supplied and plan & design conveyance components.</p> <p>Design water treatment units for a water treatment plant.</p> <p>Estimate quantity of sewage and storm water & characteristics of sewage, design sewers and plan sewer appurtenances.</p> <p>Design components of waste water treatment plant and sludge digestion systems.</p> <p>Understand and judge methods for control of particulate matter and gaseous pollutants in the atmosphere, outline noise pollution control methods.</p>
56	20CE C26	Environmental Engineering Lab	<p>Demonstrate skills to use equipment in conducting the test procedures.</p> <p>Evaluate water quality and summarize the suitability in accordance with IS: 10500- 2012, Drinking Water specifications.</p> <p>Evaluate characteristics of wastewater and summarize the suitability for disposal/reuse as per standards.</p> <p>Measure air quality and classify the level of pollution based on standards set by Pollution Control Board.</p> <p>Evaluate and analyse bacteriological quality of water.</p>
57	20CE C27	Engineering Geology Lab	<p>Identify the minerals, rocks and various</p> <p>Identify structural features like folds, faults and unconformities.</p>


PROFESSOR & HEAD
 Department of Civil Engineering
 Jyoti Bherathi Institute of Technology
 HYDERABAD-5000 075

			Measure the electrical resistivity of rocks, soil
			Interpret the topographic maps.
			Identify the geological and geotechnical features of given places
58	20EG CO3	Employability Skills	Learn the art of communication, participate in group discussions and case studies with confidence and to make effective presentations.
			With- resume packaging, preparing them to face interviews.
			Build an impressive personality through effective time management, leadership qualities, self-confidence and assertiveness.
			Understand professional etiquette and to make them learn academic ethics and value system.
			To be competent in verbal aptitude.
59	20CE E09	Foundation Engineering	Compute the stress distribution in the ground under different loading conditions.
			Estimate the bearing capacity of different soils for shallow foundation.
			Design the deep foundation by piles or wells.
			Deal with the field problems in laying cofferdams and different dewatering techniques and sampling methods.
			Interpret and implement the Concepts of Cofferdams, Caissons and Timbering of Excavations
60	20CE E10	River Engineering	Understand about river morphology
			Apply knowledge on river aggradation and degradation
			Evaluate different models of river flow hydraulics
			Analyse hydraulic geometry and execute river protection and training works
			Design river training and river bank protection
61	20CE E11	Urban Transportation Planning	Apply the fundamental knowledge for forecasting and creating the transportation infrastructure facilities scientifically and ethically by collecting the appropriate sample data.
			Identify the procedures for collecting the traffic related data for generating and validating transport demand models.
			Apply four stage transportation demand modelling by creating mathematical models to understand the travel pattern and behavior of road users.
			Apply the mathematical knowledge in solving the transportation planning related problems by analyzing transportation data.
			Evaluate highway projects by using different economic methods and understand the role of computer applications in transportation planning.
62	20CE E12	Basics Of Earthquake	Apply the fundamentals of engineering seismology; classify the characteristics and effects of strong motion earthquakes


PROFESSOR & HEAD
 Department of Civil Engineering
 Chaitanya Bharathi Institute of Technology
 GANDIPET, HYDERABAD-5000 075

		Engineering	<p>Develop the concepts of damped and un-damped vibrations in single and multi-degrees of freedom systems.</p> <p>Estimate the seismic loads on structures and analyse using seismic coefficient and response spectrum methods</p> <p>Examine the causes of damages of urban and rural buildings and interpret the design provisions from IS-1893 part - I (2016) and IS - 13920(2016).</p> <p>Asses the use of various earthquake resistant devices; apply suitable construction techniques for retrofitting</p>
63	20BT O02	Biomaterials For Engineers	<p>Explain types and properties of Biomaterials.</p> <p>Compare the techniques for manufacture of metallic Biomaterials and their use in health care industry.</p> <p>Outline the physiological properties and various techniques for manufacture of ceramic biomaterials.</p> <p>Illustrate the preparation of polymer and composite Biomaterials.</p> <p>Apply the different type of Biomaterials in health industry.</p>
64	20ME O06	Nano Materials And Technology	<p>Understand the basic concepts, developments and challenges in nanotechnology.</p> <p>Describe the methods of evaluating magnetic and electronic properties, microstructure by spm and atomic force microscopy.</p> <p>Apply heterogeneous methods and characterization techniques of zero & one dimensional nanostructures.</p> <p>Evaluate various nanomaterial fabrication techniques</p> <p>Analyze nano materials and nano bio materials for obtaining solutions to societal problems.</p>
65	20CS O14	Cloud Technologies	<p>Understand the need of cloud technology and terminology.</p> <p>Identify and understand the cloud infrastructure.</p> <p>Write scripts for the automation of infrastructure and software deployment</p> <p>Design solutions for the automation and migration of manual data centers.</p> <p>Develop scripts for the automation of cloud services</p>
66	20CE C28	Construction Engineering And Management	<p>Build an Organization and Select a suitable type of project delivery method for successful project implementation.</p> <p>Plan the construction project making use of a suitable technique for the project under consideration.</p> <p>Determine optimized project time and cost with the exercise of proper monitoring and control in construction projects</p> <p>Plan and implement suitable construction safety measures and quality management systems in construction projects.</p> <p>Choose proper equipment for the execution of various operations in construction and analyze various issues of contracting.</p>
67	20MB C01	Engineering Economics And	Apply fundamental knowledge of Managerial Economics concepts and tools.


PROFESSOR & HEAD
 Department of Civil Engineering
 Chaitanya Bharathi Institute of Technology
 WARDHANA, HYDERABAD-5000 075

		Accountancy	Analyze various aspects of Demand Analysis, Supply and Demand Forecasting. Understand Production and Cost relationships to make best use of resources available. Apply Accountancy Concepts and Conventions and preparation of Final Accounts. Evaluate Capital and Capital Budgeting decision based on any technique.
68	20CE E13	Finite Element Methods	Apply the fundamentals of FEM, elements of theory of elasticity for 2D, 3D and axisymmetric problems. Apply Principle of minimum potential energy and Principle of Virtual work; analyze simple problems using Rayleigh Ritz Method and Galerkin's method. Formulate the local and global stiffness matrix, load matrix for 1D bar elements and 2D truss elements and analyze simple problems. Develop the stiffness matrix for beams and rigid jointed plane frames and solve problems with degree of freedom not exceeding three. Select displacement functions, formulate the stiffness matrix, load matrix for CST elements. Use Iso-parametric elements and quadrilateral elements, and evaluate definite integral by Gauss Quadrature.
69	20CE E14	Applications Of Data Analytics In Civil Engineering	define the descriptive, predictive and prescriptive models and select suitable tools or techniques for application in civil engineering problems identify the discrete and continuous random variables and select appropriate mathematical models which support decision making under uncertainty design data collection process required for descriptive and exploratory models for problems in civil engineering relate estimators and estimates to process of estimation and thus implement the various modeling techniques to uncover the patterns in the civil engineering related data formulate hypothesis and their corresponding confidence intervals for various count data based and discrete choice models along with goodness of fit measures
70	20CE E15	Design Of Hydraulic Structures	Design Surplus weir Design various components of direct sluice Design of glacis type canal drop Design of cross regulator Design of spillways and energy dissipater
71	20CE E16	Concrete Technology And Special Concretes	Able to understand the physical and chemical properties of concrete and should have knowledge on tests on cement and aggregates. Able to explain the properties of both fresh and hardened concrete.


PROFESSOR & HEAD
 Department of Civil Engineering
 Chaitanya Bharathi Institute of Technology
 GANDIPET, HYDERABAD:5000 075

			<p>Able to apply the knowledge on chemical and mineral admixtures of cement.</p> <p>Design the mix proportions for the specific work for required strength and workability with available materials at workplace.</p> <p>Be familiar with the special concerts used in construction for various purposes</p>
72	20CE E17	Railway And Airport Engineering	<p>Understand the role played by various components of permanent way</p> <p>Apply engineering knowledge to geometric design of a railway track as per the standards and understand the importance and components of points and crossings</p> <p>Create facilities for railway passengers and goods, identify procedures to be followed for maintenance of track and understand various types of railway signals and their functions, need and requirements of drainage system in railway tracks</p> <p>Understand the structure of airport system, components of aircraft and airport and apply engineering knowledge for selection of airport sites.</p> <p>Plan airports and facilities as per international standards and also understand the corrections to be applied for runway and design airports as per ICAO standards and develop the facilities required for passengers and aircrafts.</p>
73	20CE E18	Applications Of Block Chain Technology In Civil Engineering	<p>Gain a clear understanding of the concepts that underlie Block chain and Block chain and types of Block chain.</p> <p>Understand key mechanisms like decentralization, transparency and trust, immutability.</p> <p>Understand the importance of Block chain in construction industry apply the concepts of smart contracts using Block chain technology.</p> <p>Understand and apply the project management systems using Block chain technology.</p> <p>Apply the concepts of building information modeling using Block chain technology.</p>
74	20CE E19	Design Of Steel Structures – Ii	<p>Design welded plate girders and the secondary components, understand the phenomenon of shear buckling in girders.</p> <p>Estimate the loads on gantry girders, Design gantry girder including connections.</p> <p>Identify the suitability of bridge type, Design Roller & Rocker bearings for railway bridges</p> <p>Develop the layout of deck type riveted plate girder bridges and design the bridges for loads including wind effects</p> <p>Choose the appropriate truss configuration, develop layout of the bridge, and design and detail truss girder bridges</p>
75	20CE E20	Advanced Environmental Engineering	<p>Characterize the effluents, analyze the effects of industrial effluents on the human health & thoroughly practice environmental legislation</p> <p>Apply the methods of Industrial waste water management and treatment.</p>



PROFESSOR & HEAD
 Department of Civil Engineering
 Chaitanya Bherathi Institute of Technology
 GANDIPET, HYDERABAD-5000 075

			Evaluate, monitor and analyze ambient air quality.
			Apply the methods of air pollution control to field situations.
			Evaluate the impact of road project, industry and a dam on the surrounding environment.
76	20CS O07	Basics Of Machine Learning	To learn Machine Learning algorithms.
			To learn to work with data's, preparing datasets for real world problems
			To study various machine learning algorithms.
			To analyze data using machine learning techniques.
			To become familiar with usage of time series and deep learning approaches.
77	20AD O01	Introduction To Python Programming	Explore data operations on list, tuple and dictionary in python.
			Understand deployment of models on different datasets.
			Apply supervised, unsupervised, resembling and NLP models on different datasets.
			Perform data analysis using python packages.
			Build and evaluate the models using python programming.
78	20IT O02	Principles Of Internet Of Things	Comprehend the terminology, protocols and communication models of IoT.
			Define the various IoT enabling technologies and differentiate between M2M and IoT.
			Acquire the basics of Python Scripting Language used in developing IoT applications.
			Describe the steps involved in IoT system design methodology.
			Design simple IoT systems using Raspberry Pi board and interfacing sensors with Raspberry Pi.
79	20CE C29	Concrete Technology Lab	Determine the properties of given cement sample and assess its suitability for use in construction.
			Determine the properties of fine and coarse aggregate samples to assess their suitability for use in construction works.
			Measure the workability of concrete and recommend its suitability for structural works.
			Design a suitable concrete mix proportion as per the code provisions for the specified grade.
			Conduct destructive and non-destructive tests to evaluate the quality and strength of concrete.
80	20CE C30	Computer Applications Lab	Develop a model of framed structure and analyze using STAAD – Pro.
			Design the components of a framed structure including isolated footings using STAAD-Pro and STAAD Foundation.
			Evaluate stability of slope using Slip Circle method and design a cantilever retaining wall using GEO5
			Analyze pipe networks using EPANET and sewer networks using SEWER Gems.



PROFESSOR & HEAD
 Department of Civil Engineering
 Chaitanya Bharathi Institute of Technology
 GANDIPET, HYDERABAD-5000 075

			Develop geo-referenced thematic maps and carry out overlay analysis using Arc GIS/QGIS
81	20EG MO4	Gender Sensitization	<p>Understand the difference between "Sex" and "Gender" and be able to explain socially constructed theories of identity.</p> <p>Recognize shifting definitions of "Man" and "Women" in relation to evolving notions of "Masculinity" and "Femininity".</p> <p>Appreciate women's contributions to society historically, culturally and politically.</p> <p>Analyse the contemporary system of privilege and oppressions, with special attention to the ways gender intersects with race, class, sexuality, ethnicity, ability, religion, and nationality.</p> <p>Demonstrate an understanding of personal life, the workplace, the community and active civic engagement through classroom learning.</p>
82	20CE C31	Technical Semin	<p>Identify their domain interest through critical review of literature.</p> <p>Develop the technical skill in preparing a well-structured report on the chosen topic.</p> <p>Develop the skill of presenting a structured seminar using Power Point presentation tools.</p> <p>Improve communication skills</p> <p>Defend one's presentation by interactions with the participants.</p>
83	18MT CO1	Mathematics- I	<p>Solve system of linear equations and identify the Eigen values and Eigen vectors in engineering problems.</p> <p>Check the series convergence.</p> <p>Find the evolutes of the given curves.</p> <p>Expand and find extreme values of functions of two variables</p> <p>Understanding the significance of gradient, divergence and curl.</p> <p>An ability to solve the problems and interpret in geometrical approach.</p>
84	18PY C03	Introduction To Mechanics And Electromagnetic Theory	<p>Describe the types of oscillations and analyze them</p> <p>Develop the concepts of dynamics and apply them to solve the related problems.</p> <p>Analyze the role of different laws in electrostatics.</p> <p>Discuss the significance of magnetostatics.</p> <p>Develop the concepts related to electromagnetic behavior.</p>
85	18CS C01	Programming For Problem Solving	<p>Identify the computing environments.</p> <p>Formulate solutions to problems and represent them using algorithms/ Flowcharts.</p> <p>Choose proper control statements and data structures to implement the algorithms.</p> <p>Trace the programs with test the program solution.</p>

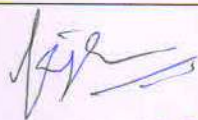


PROFESSOR & HEAD
 Department of Civil Engineering
 Chaitanya Bharathi Institute of Technology
 HYDERABAD-500073

			Decompose a problem into modules and use functions to implement the modules.
			Develop applications using file I/O.
86	18EG C01	English	The students will understand the nature, process and types of communication and will communicate effectively without barriers.
			The students will write correct sentences and coherent paragraphs
			The students will know how to condense passages by writing précis and write essays by using accurate grammar and appropriate vocabulary.
			The students will demonstrate advanced writing skills by drafting formal reports.
			The students will apply their reading techniques and analyze reading comprehension passages.
			The students will become effective communicators and will display their advanced skills of reading and writing and use correct grammar and appropriate vocabulary in all contexts.
87	18PY C06	Mechanics And Electromagnetic Laboratory	Understand the concept of errors and find the ways to minimize the errors
			Demonstrate the various kinds of oscillations.
			Determine the loss of energy of a ferromagnetic material and its uses in electrical engineering .
			Understand the suitability of dielectric materials in engineering applications
			Use LCR circuits in different applications.
88	18CS C02	Programming For Problem Solving	Identify and setup program development environment.
			Implement the algorithms using C programming language constructs.
			Identify and rectify the syntax errors and debug program for semantic errors.
			Analyze the results to evaluate the solutions of the problems.
			Solve problems in a modular approach using functions.
			Implement file operations with simple text data.
89	18ME C02	Workshop/ Manufacturing Practice	Fabricate components with their own hands
			Get practical knowledge of the dimensional accuracies and dimensional tolerances possible with different manufacturing processes.
			Assembling different components, student will be able to produce small mechanisms/devices of their interest.
			Gain practical skills of carpentry, tinsmithy, fitting, house wiring
			Gain knowledge of different Engineering Materials and Manufacturing Methods.
			Understand trades and techniques used in Workshop and chooses the best material/ manufacturing process for the application.


PROFESSOR & HEAD
 Department of Civil Engineering
 Chaitanya Bharathi Institute of Technology
 GANDIPET, HYDERABAD-5000 075

90	18EG C02	English Lab	The students will differentiate the speech sounds in English
			The students will interact with the software and understand the nuances of pronunciation in English.
			The students will speak with the proper tone, intonation and rhythm and apply stress correctly.
			The students will demonstrate their listening skills by analyzing the IELTS and TOEFL listening comprehension texts.
			The students will speak with clarity and confidence
			The students will work in teams and discuss various topics and demonstrate their presentation skills through posters.
91	18MT CO3	Mathematics– ii	Find the areas, volumes and surface of solids revolution.
			Use Greens, Gauss and Stoke's theorems to find the surface and volume integrals
			Able to solve solutions of differential equations with initial and boundary value problems.
			Solve the problems on analytic functions, Cauchy's theorem and Cauchy's integral formula.
			Real and complex integrals by using Cauchy's theorems.
			Solve physical and engineering problems.
92	18CY C01	Chemistry	Analyse microscopic chemistry in terms of atomic and molecular orbitals and intermolecular forces.
			Rationalize bulk properties and processes using thermodynamic considerations & Ionic Equilibria.
			List major chemical reactions that are used in the synthesis of molecules.
			Apply the various methods used in treatment of water for domestic and industrial use.
			Discuss the various Engineering materials & Drug synthesis & their applications.
93	18CE C01	Engineering Mechanics	Solve problems dealing with forces in plane and space force systems, draw free body diagrams to analyze various problems in equilibrium, for smooth and frictional surface.
			Determine centroid and moment of inertia for elementary, composite areas and bodies
			Analyze simple trusses for forces in various members of a truss
			Solve problem in kinematics and kinetics of particles and rigid bodies
			Analyze body motion using work energy principles, impulse and momentum approach and able to apply the concepts of simple harmonic motion and free vibrations in dynamics.
94	18ME C01	Engineering Graphics And Design	Introduction to engineering design and its place in society
			Exposure to the visual aspects of engineering design.
			To become familiar with engineering graphics standards.
			Exposure to solid modelling.




PROFESSOR & HEAD
 Department of Civil Engineering
 Chaitanya Bharathi Institute of Technology
 GANDIPET, HYDERABAD-5000 075

			Exposure to computer-aided geometric design
			Exposure to creating working drawings
			Exposure to engineering communication.
95	18EE C01	Basic Electrical Engineering	Acquire the concepts of Kirchoff's laws and network theorems and able to get the solution of simple dc circuits.
			Obtain the steady state response of RLC circuits and also determine the different powers in AC circuits.
			Acquire the concepts of principle of operation of Transformers and DC machines.
			Acquire the concepts of principle of operation of DC machines and AC machines.
			Acquire the knowledge of electrical wiring and cables and electrical safety precautions.
			Recognize importance of earthing and methods of earthing and electrical installations.
96	18EE C02	Basic Electrical Engineering Lab	Get an exposure to common electrical components and their ratings.
			Make electrical connections by wires of appropriate ratings.
			Understand the circuit analysis techniques
			Determine the parameters of the given coil.
			Understand the basic characteristics of transformer
			Understand the basic characteristics of dc and ac machines.
97	18CY C02	Chemistry Lab	Estimate rate constants of reactions from concentration of reactants/ products as a function of time.
			Measure molecular/system properties such as surface tension, viscosity, conductance of solutions, redox potentials, chloride content of water, etc
			Synthesize a small drug molecule and Identify the organic compounds.
			understand the importance of analytical instrumentation for different chemical analysis.
			Perform interdisciplinary research such that the findings benefit the common man.
97	18CE C02	Building Construction Practice	To identify various building materials and select suitable type for given situation.
			To know different types of masonry, types of bonds used in construction of walls of buildings.
			To know the different types of roofs, stair used in building works.
			To plan suitable types of building and to prepare plan, section and elevation of building with flat / sloped roof.
			To know the various components of RCC framed structure, RCC Structures, Roof trusses and formwork
98	18CE C03	Solid Mechanics	Evaluate the strength of various Civil Engineering materials, against structural actions such as compression, tension, shear and bending.



PROFESSOR & HEAD
 Department of Civil Engineering
 Chaitanya Bharathi Institute of Technology
 GANDIPET, HYDERABAD-5000 075

			<p>To analyze statically determinate beams and sketch SFD and BMD.</p> <p>To suggest suitable material and sections from among the available, for use in Civil Engineering context.</p> <p>To evaluate the behaviour and strength of Civil Engineering materials under the action of compound stresses and thus understand failure concepts.</p> <p>To design thin and thick cylinders for resisting internal and external pressures</p>
99	18CE C04	Surveying And Geomatics	<p>Know the estimation of various parameters required for execution of a project.</p> <p>Be in a position to choose appropriate instruments for carrying Surveying.</p> <p>Can identify the data required for preparation of topo sheets.</p> <p>Acquiring the data accurately and quickly with proper checks.</p> <p>Knows the way of transferring data from topo sheets to ground and vice versa</p>
100	18CE C05	Fluid Mechanics	<p>Apply fluid flow concepts and evaluate the various properties of fluid.</p> <p>Use of pressure gauges, design hydraulic gates.</p> <p>Apply the continuity, momentum and energy principles in hydraulic applications.</p> <p>Measure velocity and Discharge of fluid flow in pipes, channels, and tanks. Apply model studies to practical applications.</p> <p>Quantify losses and design pipes</p>
101	18CE C06	Surveying And Geomatics Lab	<p>To use simple as well as modern surveying instruments.</p> <p>To develop L.S and C.S for road works, Canal works, using Auto levels and to develop contour map of the given area.</p> <p>To use Total Station for locating ground details and plotting.</p> <p>To set simple curves using Total Station.</p> <p>To locate ground features using GPS</p>
102	18CE C07	Fluid Mechanics Lab	<p>Ability to find the coefficient of discharge for flow through pipes, channels and tanks.</p> <p>To differentiate between viscous and non-viscous flows and identify the governing parameters for both.</p> <p>Applies the concept of energy and momentum principles.</p> <p>Ability to find the stability and metacentre of floating body.</p> <p>Applies the concept of hydrostatic forces on flat and curved surfaces</p>
103	18CE C08	Hydraulic Engineering	<p>Analyze the fluid effect related to laminar and turbulent flow in pipes.</p>


PROFESSOR & HEAD
 Department of Civil Engineering
 Chaitanya Bharathi Institute of Technology
 GANDIPET, HYDERABAD-5000 075


			Interprets the basics of computation of drag and lifts forces in the field of aerodynamics, boundary layer effect.
			Apply the concepts of open channel flow and design the efficient channel.
			Apply the concepts of non-uniform open channel flow to the field problems.
			Design the turbines and pumps, should be able to run the turbines and pumps for efficient conditions
104	CE C09	Reinforced Concrete Design - I	Use and suggest Reinforced concrete for various practical applications, interpret the clauses of IS:456 and apply the working stress method of design for rectangular beams.
			Design RC beams of rectangular and flanged sections/ for flexure using limit state method.
			Design RC beams for shear and torsion and check for bond and serviceability.
			Analyze and design solid rectangular RC slabs of one way (cantilever, simply supported and continuous) and two way (simply supported and continuous).
			Design RC columns (short and long) and axially loaded footings of circular and rectangular sections
105	CE C10	Structural Analysis-I	Compute deflections in determinate beams, under various types of static loads, using a suitable method.
			Analyze the indeterminate beams subjected to various types of loads.
			Analyze & design circular shafts subjected a given torque and also to determine the strain energy in members under various loading situations.
			Analyze various types of springs and also the columns.
			Analyze the members subjected to unsymmetrical bending and locate shear center for different sections.
106	CE M01	Environmental Science	To define environment, identify the natural resources and ecosystems and contribute for the conservation of bio-diversity.
			To suggest suitable remedial measure for the problems of environmental pollution and contribute for the framing of legislation for protection of environment.
			To relate the social issues and the environment and contribute


PROFESSOR & HEAD
 Department of Civil Engineering
 Chaitanya Bherathi Institute of Technology
 GANDIPET, HYDERABAD-5000 075

			for the sustainable development.
			To follow the environmental ethics.
			To contribute for the mitigation and management of environmental disasters
107	CE C11	Solid Mechanics Lab	To determine the strength of various materials under structural actions like direct tension, compression, flexure and torsion.
			To compute the elastic property of the materials of the determinate beams by measurement of deflections.
			To determine the impact/ shear strength of steel specimen.
			Conduct bend test of steel bars.
			Determine the shear force and bending moment in determinate beams
108	CE C12	Hydraulic Engineering Lab	Ability to compute the velocity, discharge, channel roughness coefficient, and energy loss in uniform flows and non-uniform flows.
			Ability to find drag and lift forces and coefficients.
			To differentiate between major loss and minor loss and find the losses.
			Ability to construct characteristic curves and find performance, efficiency of turbine and pumps.
			Ability to find viscosity, shear stress, velocity changes and loss in a laminar flow.
109	CE C13	Transportation Engineering	Know how to apply various IRC Standards for the Geometric design of highways.
			Methods of organizing collection of traffic related data and analyzing the data for different applications
			Applies the Pavement design concepts to different types of pavement and analyze the collected field data and carries out the process for design of traffic management techniques.
			Takes precautions required for the execution of construction of pavements and applies relevant IRC standards.
			To understand the reasons for pavement failures and to suggest suitable remedial measures,


PROFESSOR & HEAD
 Department of Civil Engineering
 Jyoti Bhatnagar Institute of Technology
 HYDERABAD-5000 075

110	CE C14	Geotechnical Engineering	Be able to identify various types of soils, their properties and to apply the basic principles of soil mechanics to simple field problems.
			Be able to prepare models for the behavior of soils, flow through soils and use / suggest soil as a construction material.
			Be able to compute the settlements of the compressible soils.
			Be able to estimate the strength of soil under different loading conditions.
			Be able to deal with field problems of earth pressures and slope stabilities.
111	CE C15	Structural Analysis – Ii	Draw the ILDs and determine the maximum SF and BM for various positions of the moving load.
			Draw the ILDs for forces in the members of trusses and find the maximum forces for various positions of the moving loads.
			Analyze three hinged arches for various loads.
			Analyze cables and suspension bridges with stiffened girders.
			Find deflections of joints in trusses and plane frames
112	CE E01	Prestressed Concrete	Students will understand the general mechanism of pre stressed concrete members, types of pre stressing, losses in pre stressing, short and long term deflections in P.S.C members.
			Students will be able to evaluate the behaviour of pre stressed concrete structures,
			Students will be able to analyze and design of pre stressed concrete structures using serviceability limit states.
			Student will be able to analyze and design for shear in P.S.C members.
			Student will be able to analyze the stresses in anchorage zones and design the end anchorages
113	CE E02	Green Building Technologies	Be able to identify the fundamentals of energy use and energy processes in building.
			Be able to identify the energy requirement and its management.
			Apply the knowledge about Sun-earth relationship vis-a-vis


PROFESSOR & HEAD
 Department of Civil Engineering
 Chaitanya Bharathi Institute of Technology
 GANDIPET, HYDERABAD-5000 075

			its effect on climate.
			Be able to deal with the end-use energy requirements.
			Be familiar with the audit procedures of energy
114	CE E03	Principles Of Geographical Information Systems	To be in a Position to identify data required for implementation of GIS.
			Design and development of quality GIS Data base.
			Ability to choose appropriate GIS functions for the analysis of GIS data.
			Ability to identify appropriate GIS software and its requirements for implementing in a organization.
			Use GIS in decision making
			Select appropriate masonry unit and mortar mixes for masonry construction.
115			Distinguish from a wide range of materials for their suitability to arrive at feasible and optimal solutions for masonry constructions.
			Apply knowledge of structural masonry for advanced research and construction procedures.
			Justify the design of masonry buildings for sustainable development.
			Repair and strengthen the existing masonry structures for seismic loads
116	18CE E05	Solid And Hazardous Waste Management	Characterize the solid waste according to the legislations.
			Apply the steps in waste reduction at source, collection techniques, resource recovery/recycling, transport and disposal options.
			Characterize the hazardous waste and decide on transport methods of the same.
			Select the site for disposal of hazardous waste and suggest remediation measures for disposal sites.
			Apply various legislations pertaining to hazardous waste management according to the situations
117	18CE E06	Mechanics Of	Capable of designing curved bars of different cross sections.


PROFESSOR & HEAD
 Department of Civil Engineering
 Chaitanya Bharathi Institute of Technology
 GANDIPET, HYDERABAD-5000 075

		Materials	Able to determine stresses in beams curved in plan.
			Capable of determining stresses in discs, rings & cylinders.
			Able to employ brittle coating techniques for stress analysis.
			Proficient in using an appropriate elastic theory of failure for the materials and determine principal stresses
118	18CE E07	Repair And Retrofitting Of Structures	Appraise importance of Repair, Rehabilitation and Maintenance
			Develop familiarity with Serviceability evaluation tests
			List out properties to be considered to choose from available repair materials
			Develop familiarity with various repair methods and rehabilitation strategies
			Monitor the health of structures
119	18CE E08	Concrete Technology	Determine the properties of the ingredients of concrete and adjudge their suitability
			Determine the properties of fresh and hardened concretes.
			Carryout concrete mix design as per the requirement
			Understand the durability aspects of concrete and use admixtures in suitable doses for improvement of various properties of concrete.
			Employ a special type of concrete depending on the purpose
120	18CE C16	Transportation Engineering Lab	Conduct various tests on bitumen, define its quality and decide its suitability for use in pavements.
			Conduct various tests on aggregates, define their quality and decide the suitability for use in roads.
			Conduct various traffic studies and compute the geometric and structural requirements of highway pavements.
			Conduct and interpret the CBR test, bitumen extraction test and Marshal Stability tests.
			Prepare representative samples for various tests by coning and quartering.
121	18CE C17	Geotechnical	Identify and classify soils with reference to their


PROFESSOR & HEAD
 Department of Civil Engineering
 Jyoti Bharathi Institute of Technology
 HYDERABAD-5000 075

		Engineering Lab	<p>characteristics</p> <p>Describe the behaviour and effect of water in soils</p> <p>Calculate and plot soil strength parameters</p> <p>Describe methods of improving soil stability with reference to compaction.</p> <p>Conduct various laboratory tests on soils and calculate soil properties from test results</p>
122	18CE C18	Auto Cad Lab	<p>To use basic drafting tools and create Civil Engineering drawings.</p> <p>To adopt different commands in creation of objects.</p> <p>To acquaint various techniques for faster implementation with different combinations of commands.</p> <p>To improve the presentation of the drawing by using defining tools, dimensioning, hatching etc.</p> <p>To draw detailed schemes and working drawings up to 2-D single storey buildings.</p>
123	18CE C19	Design Of Steel Structures -I	<p>Attains fundamental knowledge of the design of various Steel Structures and connections and is able to interpret the specifications of relevant codes.</p> <p>Able to design compression members & column bases.</p> <p>Able to understand the behavior of tension members and its design.</p> <p>Able to understand the classification of beam section, local failure of section and design of flexural members.</p> <p>Able to estimate the loading roof trusses and design of purlins</p>
124	18CE C20	Environmental Engineering	<p>Suggest a forecasting method for population and estimate quantity of water to be supplied and plan conveyance components.</p> <p>Design water treatment units for a water treatment plant.</p> <p>Estimate quantities of sewage and storm water and plan conveyance components.</p> <p>Design components of waste water treatment plants.</p>



PROFESSOR & HEAD
 Department of Civil Engineering
 Chaitanya Bharathi Institute of Technology
 GANDIPET, HYDERABAD-5000 075

			Be conversant with issues of air pollution and its control methods
125	18CE C21	Engineering Geology	<p>Identify the different minerals and distinguishing features exhibited by the rocks</p> <p>Identify the geological structures like folds, faults, joints and unconformities present in rock and describe the processes of weathering, classify and distribution of soils .</p> <p>Asses the occurrence of ground water in various litho logical formations and location of bore wells.</p> <p>Evaluate the suitability of site for the dam construction</p> <p>Evaluate the suitability of site for the tunnel construction, recognize the causes and effects of earthquakes, tsunamis and landslides and suggest mitigation measures.</p>
126	18CE E09	Advanced Structural Analysis	<p>Analyze two hinged arches and the redundant pin-jointed plane frames.</p> <p>Analyze the indeterminate beams, plane frames and pin-jointed plane frames, for different loading conditions, using system approach of flexibility matrix method.</p> <p>Analyze the indeterminate beams, plane frames and pin-jointed plane frames, for different loading conditions, using system approach of Stiffness matrix method.</p> <p>Analyze the multi-story frames for gravity and lateral loads by using approximate methods.</p> <p>Analyze the simple cases of indeterminate structures with degree of freedom not exceeding three</p>
126	18CE E10	Foundation Engineering	<p>Compute the stress distribution in the ground under different loading conditions.</p> <p>Estimate the bearing capacity of different soils for shallow foundation.</p> <p>Design the deep foundation by piles or wells.</p> <p>Deal with the field problems in laying cofferdams and different dewatering techniques and sampling methods.</p> <p>Interpret and implement the Concepts of Coffor dams , Caissons and Timbering of Excavations</p>
127	18CE E11	Water Shed Management	Calculate watershed parameters and analyze watershed characteristics to take appropriate management action.


PROFESSOR & HEAD
 Department of Civil Engineering
 Chaitanya Bharathi Institute of Technology
 GANDIPET, HYDERABAD-5000 075

			Quantify soil erosion and design control measures.
			Implement conserve water through rain water harvesting.
			Plan watershed management and involve community participation
			Apply Integrated Watershed Management and manage Ecosystem
128	18CE E12	Urban Transportation Planning	To apply the fundamental knowledge for creating the transportation infrastructure facilities scientifically and ethically.
			To understand the travel pattern behavior of various people
			To apply the computer knowledge in solving the transportation planning related problems
			To understand about different methods of economic evaluation
			To select the transportation related plans economically and ethically
129	18CE E13	Finite Element Methods	Apply the fundamentals of FEM, elements of theory of elasticity for 2D, 3D and Axisymmetric problems
			Apply Principle of minimum potential energy and Principle of Virtual work analyze simple problems using Rayleigh Ritz Method and Galerkin's method.
			Formulate the Global stiffness matrix, load matrix and analysis structures for 1D bar elements and 2D trusses.
			Formulate the Global stiffness matrix, load matrix and analysis structures for beams and rigid jointed plane frames
			Formulate the Global stiffness matrix, load matrix and analysis structures using CST elements, Iso-parametric elements, and quadrilateral elements and also solve Gauss Quadrature numerical integration
130	18CE E14	Reinforced Concrete Design-II	Design and detail continuous beams & frames.
			Design and detail different types of slabs & rectangular and trapezoidal combined footings.
			Design and detail cantilever and counter fort retaining walls.
			Design and detail circular and rectangular water tanks




PROFESSOR & HEAD
 Department of Civil Engineering
 Chaitanya Bharathi Institute of Technology
 NANDIPET, HYDERABAD-5000 073

			Design and detail the various components of Solid slab & T-Beam bridges.
131	18CE E15	Railway Engineering	To be in a position to identify and select permanent way components
			Design of a railway track as per the standards.
			know the importance of points and crossings
			Knows the facilities to be created for railway passengers and goods and maintenance of track
			Knows various types of railway signals and their functions and the design of drainage system
132	18CE E16	Ground Water Engineering	Assess groundwater potential and head.
			Estimate hydraulic conductivity and storage coefficient for time variant flow.
			Investigate groundwater availability for a given area.
			Plan and design artificial recharge.
			Construct model and analyze groundwater flow
133	18CE C23	Environmental Engineering Lab	Understand about the equipment used to conduct the test procedures
			Perform the experiments in the lab
			Examine and Estimate water, waste water and air Quality
			Compare the water, air quality standards with prescribed standards set by the local governments
			Develop a report on the quality aspect of the environment
134	18CE C23	Engineering Geology Lab	Identify the minerals, rocks and various structural features like folds, faults and unconformities.
			Measure the electrical resistivity of rocks, soil etc and determine the depth of water table.
			Locate the occurrence of different rocks, soils and study of topographic maps.
			Draw the sections pertaining to the study of folds, faults and unconformities.


PROFESSOR & HEAD
 Department of Civil Engineering
 Chaitanya Bharathi Institute of Technology
 WINDPET, HYDERABAD-5000 075

			Identify the geological and geotechnical features of given places
135	18CE C24	Construction Engineering And Management	Employ a suitable type of construction method and project delivery system for successful project completion.
			Plan the construction project, choosing a suitable technique for the construction project.
			Monitor and control construction projects with respect to time and cost and optimise projects based on costs.
			Implement construction safety and quality management systems in construction field.
			Select proper equipment for the execution of different operations in construction and deal with various issues of contracting.
136	18CE C25	Hydrology And Water Resources Engineering	Ability to design a Rain Gauge network, Understand the interaction among various processes in the hydrologic cycle
			Ability to estimate runoff, understand irrigation practices.
			Understand the basic aquifer parameters, estimate groundwater resources, and reservoir planning
			Capability to design canals, Capacity to operate irrigation system efficiently
			Able to design gravity dams, earth dams. Understand spillways and energy dissipation.
137	18CE C26	Estimation, Specifications And Costing	Prepare detailed estimates for different structures.
			Prepare the detailed estimate steel quantities of RCC framed works and to prepare BBS.
			Do the rate analysis for different items of works of buildings, concrete and bituminous road works.
			Apply TSSDSR and departmental procedures.
			Work out standard procedure and specifications of construction works.
138	18CE E17	Design Of Steel Structures-II	Design a welded plate girder for industrial and infrastructural purpose, as per the specifications of relevant codes
			Design a gantry girder for industrial workshops as per the specifications of relevant codes


PROFESSOR & HEAD
 Department of Civil Engineering
 Jyoti Bhatnagar Institute of Technology
 Hyderabad-5000 075

			Design Roller & Rocker bearings for railway bridges
			Design and detail a deck type riveted plate girder bridge using railway code and bridge rules
			Design and detail a through type riveted truss girder bridge using railway code and bridge rules
139	18CE E18	Airport Engineering	Selection of airport site based on various criteria and facilities
			Designing airport components as per standards
			knows the facilities required for passengers and aircrafts
			knows the facilities required for the airport traffic management
			Knows the importance and design of drainage system in airports
140	18CE E19	River Engineering	Ability to know about river morphology
			Ability to apply knowledge on river aggradation and degradation
			Ability to analyse river flow hydraulics
			Ability to analyse hydraulic geometry, river protection and training works
			Ability to design river training and river bank protection
141	18CE E20	Water And Air Quality Modeling	Be conversant about various systems and models and their limitations.
			Develop a water quality model based on the conditions of the streams.
			Develop models for estuaries for their continuous quality monitoring.
			Apply knowledge of plume characteristics and diffusion of stack emissions.
			Derive models for air quality monitoring and compute stack height.
142	18CE C27	Concrete Technology Lab	Determine the properties of cement and check its suitability for use in construction.
			Determine the properties of fine aggregate and check its suitability for use in construction.


PROFESSOR & HEAD
 Department of Civil Engineering
 Chaitanya Bharathi Institute of Technology
 GANDIPET, HYDERABAD-5000 075

			Determine the properties of coarse aggregate and check its suitability for use in construction.
			Determine the concrete mix proportions to suit a given requirement and test the quality of fresh concrete.
			Conduct destructive and Non-destructive tests on hardened concrete and check its quality
143	18CE C28	Computer Applications Lab	Model and analyse a framed structure and design all its components including isolated footings, using software.
			Analyse pipe networks and sewer networks using software.
			Estimate ground water flow head and velocity and also the pollutant concentration in ground water flow, using software.
			Digitize topo sheets using GIS and also prepare Map overlays using GIS.
			Analyse a natural slope using slope stability methods and design a cantilever retaining wall using software.
144	18CE E21	Earthquake Resistant Design Of Structures	Assess the cause of an earthquake , it's magnitude and its effects on structures
			Apply the concepts of Damped and Un-damped Vibrations to single , two and multi-degree systems and deduce a response spectrum
			Apply the concepts of Seismic Design Philosophy and Earthquake Resistant Design to Masonry , RC and Steel structures
			Evaluate the Seismic Performance of Engineered and Non-Engineered Urban and Rural buildings
			Apply the concepts of Seismic Resistant Construction , Base isolation techniques and other energy dissipating devices and also the concepts of Seismic Retro fitting, use and interpret the knowledge gained from the case studies of performance of buildings during past earthquakes
145	18CE E22	Ground Improvement Techniques	Know the importance of ground improvement techniques and types of techniques for different soils.
			Apply the various ground improvement techniques to address the field problems.
			Understand the degree to which soil properties may be improved; and the benefits involved
			Identify suitable ground improvement technique for specific


PROFESSOR & HEAD
 Department of Civil Engineering
 Chaitanya Bharathi Institute of Technology
 GANDIPET, HYDERABAD-5000 075

			project and its implications.
			Design ground improvement techniques as well as be able to advice regarding value engineering to save cost and obtain maximum benefits for the specific project
146	18CE E23	Design And Detailing Of Hydraulic Structures	Surplus weir
			Direct sluice
			Glacis type canal drop
			Cross regulator
			Spillway and energy dissipaters
147	18CE E24	Rural Water Supply And Onsite Sanitation System	Solve the problems related to rural water supply and sanitation.
			Design water treatment and sanitation system for rural community.
			Design wastewater treatment units and systems in rural areas.
			Develop occupation related onsite sanitation and hygiene system.
			Apply knowledge of low-cost waste management systems for rural areas, plan and design an effluent disposal mechanism.


148	16MT C01	ENGINEERING MATHEMATICS – I	Solve system of linear equations and identify the Eigen values and Eigen vector in engineering problems
			Expand and find extreme values of functions of two variables
			Trace and interpret curve behavior in physical systems
			Find the areas, volumes and surface of solids revolution
			Use-differential equations to model engineering phenomena such as circuit theory, networks
			An ability to solve the problems and interpret it in geometrical approach
149	16CY C01	ENGINEERING CHEMISTRY	This syllabus gives necessary theoretical aspects required for understanding intricacies of the subject and also gives sufficient exposure to the chemistry aspects in different disciplines of engineering
			The above knowledge also helps students to carry out inter disciplinary research such that the findings benefit the common man
			This syllabus imparts a sound knowledge on the principles of chemistry involving the different application-oriented topics required for all engineering branches.


PROFESSOR & HEAD
 Department of Civil Engineering
 Chaitanya Bharathi Institute of Technology
 HYDERABAD-5000 075

150	16PY C02	APPLIED PHYSICS	<p>Understand the advances in laser physics, holography, optical fibers and apply them in engineering & technology</p> <p>Explain the importance of wave mechanics and band theory of solids</p> <p>Analyze and apply distributions of statistical mechanics for problem solving</p> <p>Identify the materials with semiconducting and superconducting properties for engineering applications</p> <p>Understand the role of novel materials and their characterization techniques in engineering and technology</p>
151	16CS C01	PROGRAMMING AND PROBLEM SOLVING	<p>Develop algorithms for scientific problems</p> <p>Explore algorithmic approaches to problem solving</p> <p>Understand the components of computing systems</p> <p>Choose data types and structure to solve mathematical problem</p> <p>Develop modular programs using control structure, arrays and structures</p> <p>Write programs to solve real world problems using structured features.</p>
152	16ME C01	ELEMENTS OF MECHANICAL ENGINEERING	<p>Select the material depending upon requirement.</p> <p>Evaluate performance of Petrol & Diesel engines</p> <p>Demonstrate his/her knowledge in preparing process chart for various machining operations</p> <p>Estimate the power required for various power transmitting devices like belt and gear trains</p> <p>Become a successful entrepreneur after studying principles of management.</p> <p>Apply various quality control techniques after studying principles of industrial engineering.</p>
153	16EC C01	ELEMENTS OF ELECTRONICS AND COMMUNICATION ENGINEERING	<p>Familiar with the basic electronic devices and simple circuits</p> <p>Work with Boolean algebra principles, build the simple combinational and sequential circuits</p> <p>Appreciate the need for modulation, filtering and multiplexing</p> <p>Understand the working principles of a few communication systems</p> <p>Familiar to the selected applications</p>
154	16CE C03	PROFESSIONAL ETHICS AND HUMAN VALUES	<p>Students develop the capability of shaping themselves into outstanding personalities, through a value based life.</p> <p>Students turn themselves into champions of their lives.</p> <p>Students take things positively, convert everything into happiness and contribute for the happiness of others.</p> <p>Students become potential sources for contributing to the development of the society around them and institutions/ organisations they work in</p> <p>Students shape themselves into valuable professionals, follow professional ethics and are able to solve their ethical dilemmas.</p>
155	16CS C02	PROGRAMMING LABORATORY	


PROFESSOR & HEAD
 Department of Civil Engineering
 Chaitanya Bharathi Institute of Technology
 GANDIPET, HYDERABAD-5000 075

156	16ME C03	MECHANICAL AND IT WORKSHOP	
157	16PY C04	APPLIED PHYSICS LABORATORY	<p>Understand the various applications of semiconductor devices and their suitability in engineering</p> <p>Demonstrate the working of lasers and optical fibers and their applications in the field of communication</p> <p>Analyze the electrical properties of a given solid based on its energy band gap</p> <p>Verify the resistance and thermoelectric power properties with temperature variation</p> <p>Demonstrate the concept of electron and its charge experimentally</p>
158	16CY C03	ENGINEERING CHEMISTRY LABORATORY	<p>This syllabus helps the student to understand importance of analytical instrumentation for different chemical analysis.</p> <p>The above knowledge also helps students to carry out inter disciplinary research such that the findings benefit the common man.</p>
159	16 MT C02	ENGINEERING MATHEMATICS – II	<p>Solve the solutions of Differential Equations which arise in electrical circuits, vibrations and other linear systems.</p> <p>Able to solve solutions of differential equations with initial and boundary value problems.</p> <p>Evaluating definite integrals using Beta, Gamma functions</p> <p>Understanding the significance of gradient, divergent and Curl</p> <p>Use Greens, Gauss and Stoke"s theorems to find the surface and volume integrals.</p> <p>Able to solve and analyse the Engineering problems.</p>
160	16PY C01	ENGINEERING PHYSICS	<p>Describe the types of oscillations and analyze them</p> <p>Demonstrate the wave nature of the light</p> <p>Develop the concepts related to electromagnetic behavior</p> <p>Identify the various crystal systems and defects</p> <p>Explain the origin of magnetism and dielectric polarization and applications of these materials in the field of engineering & technology</p>
161	16CY C02	APPLIED CHEMISTRY	<p>At the end of the course, the students will be familiar with the fundamentals of water technology; corrosion and its control; applications of polymers in domestic and engineering areas; nano materials and their applications.</p> <p>The engineer who has the above background can effectively manage the materials in his designing applications and for discovering & improving the systems for various uses in industry, agriculture, health care, technology, telecommunications and electronics.</p> <p>The above knowledge also helps students to carry out inter disciplinary research such that the findings benefit the common man.</p> <p>Study of nano related materials helps to update the knowledge necessary to launch into the demands of the world.</p>
162	16EE C01	ELEMENTS OF	Acquire the knowledge of basic concepts of electrical circuits


PROFESSOR & HEAD
 Department of Civil Engineering
 Chaitanya Bharathi Institute of Technology
 GANDIPET, HYDERABAD-5000 075


		ELECTRICAL ENGINEERING	<p>such as Ohm's law, Kirchoff's laws etc</p> <p>Acquire the knowledge of basic Faraday's laws of electromagnetic induction</p> <p>Acquire the knowledge to solve the problem of AC circuits</p> <p>Acquire the knowledge of specifications of batteries, types of cells and sources of renewable energy</p> <p>Acquire the knowledge of electrical wiring and cables and their types and electrical equipment and their specification.</p> <p>Acquire the knowledge of safety precautions in handling electrical appliances, importance of grounding and methods of earthing.</p>
163	16CE C01	ENGINEERING MECHANICS	<p>Solve problems dealing with forces in planar force systems</p> <p>Draw free body diagrams to analyze the forces in the given structure</p> <p>Understand the concept of moments and couples in plane systems</p> <p>Understand the mechanism of friction and can solve friction problems</p> <p>Determine the centroid of plane areas and centers of gravity of bodies using integration methods</p> <p>Determine moments of inertia, product of inertia for all areas and mass moments of inertia for bodies,</p>
164	16EG C01	PROFESSIONAL COMMUNICATION IN ENGLISH	<p>Understand the nature, process and types of communication and will communicate effectively without barriers.</p> <p>Understand the nuances of listening and will learn to make notes</p> <p>Read different texts, comprehend and draw inferences and conclusions.</p> <p>Write effective paragraphs, letters and reports</p> <p>Critically analyze texts and write book reviews</p>
165	16CE C02	ENVIRONMENTAL STUDIES	<p>To understand the scope and importance of environmental studies, identify the natural resources and ecosystems and contribute for their conservation</p> <p>To understand the ecological services of biodiversity and contribute for their conservation.</p> <p>To develop skills to solve the problems of environmental pollution and contribute for the framing of legislation for protection of environment.</p> <p>To relate the social issues and the environment and contribute for the sustainable development.</p> <p>To understand the essence of the ethical values of the environment for conserving depletable resources and pollution control.</p>
166	16ME C02	ENGINEERING GRAPHICS	<p>To understand theory of projections</p> <p>Ability to improve visualization skills</p> <p>Ability to sketch Engineering Objects</p>
167	16PY C03	ENGINEERING PHYSICS LABORATORY	<p>Understand the concept of errors and find the ways to minimize the errors</p> <p>Demonstrate interference and diffraction phenomena</p>


PROFESSOR & HEAD
 Department of Civil Engineering
 Chaitanya Bharathi Institute of Technology
 GANDIPET, HYDERABAD-5000 075


			experimentally
			Distinguish between polarized and unpolarized light
			Determine the loss of energy of a ferromagnetic material and its uses in electrical engineering
			Understand the suitability of dielectric materials in engineering applications
168	16CY C04	APPLIED CHEMISTRY LABORATORY	This syllabus helps the student to understand importance of analytical instrumentation for different chemical analysis The above knowledge also helps students to carry out inter disciplinary research such that the findings benefit the common man.
169	16EG C02	PROFESSIONAL COMMUNICATION LABORATORY	The students will understand the speech sounds in English and the nuances of pronunciation The students will understand tone, intonation and rhythm and apply stress correctly The students will be able to participate in group discussions with clarity and confidence. The students will speak confidently on stage with appropriate body language. The students will debate on various issues and learn to work in teams.
170	16CE C03	Surveying	To use the instruments like chain, compass and plane table and gets an idea about the circumstances in which they can be used in field. To know the methods of behavior along with developing of contours and use the contours in civil engineering related problems To get exposure to the modern instruments like Total station and GPS instruments. To be in a position to set various horizontal curves. To be able to compute the data required for setting vertical curve and able to understand the difference between transition curve
171	16CE C04	Building Planning and Construction	To identify various building materials and select suitable type for given situation. To know different types of masonry, types of bonds used in construction of walls of buildings. To know the different types of doors, windows, roofs, stair used in building works. To plan suitable types of building for given requirement including arrangement of electrical and plumbing services To prepare plan, section and elevation of building with flat / sloped roof of client requirement
172	16CE C05	Strength of Materials – I	Evaluate the strength of various Civil Engineering materials, against structural actions such as compression, tension, shear and bending. To compute Shear force and Bending moment of statically determinate beams. To suggest suitable material and sections from among the available, for use in Civil Engineering context. To evaluate the behavior and strength of Civil Engineering materials under the action of compound stresses and thus understand failure concepts. To design thin and thick cylinders for resisting internal and external pressures and to evaluate forces in the members of truss / frames.
173	16CE C06	Engineering Geology	To identify various types of rocks, their properties, utility and suitability for construction purposes. To identify various rock deposits in India and thus suggest suitable types of foundation.


PROFESSOR & HEAD
 Department of Civil Engineering
 Chaitanya Bharathi Institute of Technology
 GANDIPET, HYDERABAD-5000 075


			To implement the geological investigations on site.
			To suggest suitable measures for the construction of Dam and Tunnels.
			To suggest suitable preventive / remedial measures as part of mitigation and management of geological Hazards
174	16CE C07	SURVEYING LAB – I	To locate the objects, measure the distances and areas and transfer the same on to the drawings
			To suggest suitable solution for practical field problems such as two point and three point problems.
			To develop L.S and C.S for road works, Canal works, using Auto levels.
			To attain skill and expertise in traversing works using Theodolite by various methods.
			To understand and apply the necessary checks and practicing to choose appropriate method for balancing a traverse
175	16CE C08	ENGINEERING GEOLOGY LAB	To identify various types of minerals and rocks by their properties and characteristics.
			To identify the folds, faults and unconformities in rocks and suggest necessary steps.
			To suggest suitable measures before the construction of important structures like Dams, Bridges, Nuclear power plants, Sky scrapers across India, giving due reference to the distribution of various foundation rocks of that part of India.
			To suggest on the ground water aspects, keeping in view the electrical resistivity aspects of soil/rock in that locality.
			To contribute for the prediction of earthquakes, with the knowledge of seismo tectonic aspects of the country.
176	16CE C09	COMPUTER AIDED CIVIL ENGINEERING DRAFTING LAB	To use basic drafting tools and create Civil Engineering drawings
			To adopt different commands in creation of objects.
			To acquaint various techniques for faster implementation with different combinations of commands
			To improve the presentation of the drawing by using defining tools, dimensioning, hatching etc.
			To draw detailed schemes and working drawings up to 2-D single storey buildings
177	16CE C10	TRANSPORTATION ENGINEERING	Know how to apply various IRC Standards for the Geometric design of highways.
			Applies the Pavement design concepts to different types of pavement and analyze the collected field data and carries out the process for design of traffic management techniques.
			Takes precautions required for the execution of construction of pavements and applies relevant IRC standards.
			Is able to apply the design concepts of super elevation of railway curves and knows the requirements for the permanent way
			Knows how to select a site for airport construction and also knows how to fix the run way orientation and the circumstances in which the corrections to the run way length are to be applied
178	16CE C11	CONSTRUCTION MANAGEMENT AND ADMINISTRATION	Successfully apply management skills in positions within the construction industry.
			Apply technical skills and knowledge in construction, and technology in support of planning, analyzing, and solving construction problems.
			Apply professional and ethical standards of behavior in dealing with all stakeholders to manage a quality construction project from start to completion, while maintaining budget, time – schedule, quality and safety requirements.
			Put in efforts to manage the construction sites accident-free as far as possible and deal with contract management and untoward incidents at construction site efficiently.


PROFESSOR & HEAD
 Department of Civil Engineering
 Chaitanya Bharathi Institute of Technology
 GANDIPET, HYDERABAD-5000 075


			Apply optimization techniques to decision-making scenarios in professional endeavours
179	16CE C12	WATER AND WASTE WATER ENGINEERING	To design the water distribution system based on the population forecast To design various units of a WTP To apply the concepts of BOD, COD and TOC in sewerage systems and design of sewers To design the various treatment units in waste water treatment plant. About solid waste management in India and low cost treatment technologies
180	16CE C13	STRENGTH OF MATERIALS – II	Compute deflections in various types of beams under-various types of static loads, using various methods. Determine the moments and shears in indeterminate beams under various types of loadings Determine the torsional strength of structural members and also to design them to resist a given torque; also to compute strain energy in member under various loading situations. Design various types of springs and also columns & struts Evaluate the behavior of members under unsymmetrical bending and locate shear centres for different section.
181	16CE C14	FLUID MECHANICS – I	To evaluate the various properties of fluid, analyse fluid flow and forces. To apply the various laws and principles governing fluid flow to practical problems. To measure pressure, velocity and Discharge of fluid flow in pipes, channels, and tanks. To apply laws related to laminar and turbulent flow in pipes. To evaluate compressibility of gases and its behavior, apply energy & continuity equation.
182	16CE C15	STRENGTH OF MATERIALS LAB	To compute the strength of members of various materials under different structural actions such as compression, tension, flexure and torsion To compute the elastic property of the material of beams by measuring deflections in beams and using the relations between load and deflection for various type of beams. To determine the hardness of different types of materials To study the load-deflection behavior for various types of springs To study the Torque-Twist behavior of a given shaft.
183	16CE C16	SURVEYING – II LAB	To Find the Reduced level of a given point in different practical situations. To determine the area of a given topography using principles of Tachometry To use Total Station for locating ground details and plotting To set simple curves using Total Station To locate ground features using GPS.
184	16CE C18	REINFORCED CONCRETE DESIGN – I	Use and suggest Reinforced concrete for various practical applications, interpret the clauses of IS:456 and apply the working stress method of design for rectangular beams. Design RC beams of rectangular and flanged sections/ for flexure using limit state method Design RC beams for shear and torsion and check for bond and serviceability Analyze and design solid rectangular RC slabs of one way (cantilever, simply supported and continuous) and two way (simply supported and continuous)


PROFESSOR & HEAD
 Department of Civil Engineering
 Chaitanya Bherathi Institute of Technology
 GANDIPET, HYDERABAD-5000 075


			Design RC columns (short and long) and axially loaded footings of circular and rectangular sections
185	16CE C19	SOIL MECHANICS	<p>Be able to identify various types of soils, their properties and to apply the basic principles of soil mechanics to simple field problems</p> <p>Be able to prepare models for the behavior of soils, flow through soils and use / suggest soil as a construction material.</p> <p>Be able to compute the settlements of the compressible soils</p> <p>Be able to estimate the strength of soil under different loading conditions</p> <p>Be able to deal with field problems of earth pressures and slope stabilities</p>
186	16CE C20	THEORY OF STRUCTURES – I	<p>Draw the ILD's and able to find the maximum SF and BM for various positions of the moving loads</p> <p>Draw the ILD's for forces in the members of trusses and to find the maximum forces for various positions of the moving loads</p> <p>Analyze three and two hinged arches for various loads</p> <p>Find maximum forces in the cables and able to analyze suspension bridges with stiffened girders</p> <p>Find deflections of joints plane frames and trusses and analyze redundant trusses</p>
187	16CE C21	CONCRETE TECHNOLOGY	<p>Determine the properties of the ingredients of concrete and adjudge their suitability</p> <p>Determine the properties of fresh and hardened concretes</p> <p>Carryout concrete mix design and apply statistical quality control techniques for quality assurance.</p> <p>Use admixtures in suitable doses for improvement in various properties of concrete and for use in ready-mix concrete preparation.</p> <p>Employ a special type of concrete depending on the purpose</p>
188	16CE C22	FLUID MECHANICS – II	<p>Able to apply the concepts of open channel flow and pipe flow to the field problems</p> <p>Able to apply the concepts of non-uniform open channel flow to the field problems</p> <p>Interprets the basics of computation of drag and lifts forces in the field of aerodynamics, boundary layer effect, effect of pressure wave in pipes</p> <p>Able to apply model studies to practical applications, should be able design and study models in labs.</p> <p>Design the turbines and pumps, should be able to run the turbines and pumps for efficient conditions</p>
189	16CE E01	ROCK MECHANICS	<p>Able to know the basic knowledge about rocks.</p> <p>Able to determine the rock properties.</p> <p>Able to determine the strength and quality of the rocks.</p> <p>Able to know the failure criteria of the rock.</p> <p>Able to apply the preventive techniques for the rock</p>
190	16CEE02	ADVANCED SURVEYING	<p>To be in a position to understand the Photogrammetric surveying techniques</p> <p>To know the techniques involved in image processing.</p> <p>To get exposure to digital image processing.</p> <p>To be able to understand microwave sensing and its application.</p> <p>To be able to adjust the errors that are cropping while carrying surveying.</p>
191	16CE E03	ADVANCED STRENGTH OF	<p>Capable of designing curved bars of different X-sections.</p> <p>Able to determine stresses in beams curved in plan.</p>


PROFESSOR & HEAD
 Department of Civil Engineering
 Chaitanya Bharathi Institute of Technology
 WANDIPET, HYDERABAD-5000 075

		MATERIALS	Expert to determine stresses in discs, rings & cylinders Competent to employ methods of brittle coating and strain gauges for stress analysis. Proficient in using an appropriate elastic theory of failure for the materials and determine principal stresses
192	16CE C23	FLUID MECHANICS LAB	Ability to find the co-efficient of discharge for flows through various flow measuring devices. To differentiate between laminar and turbulent flows and identify the governing parameters for both. Applies the concept of Bernoulli's energy principle
193	16CE C24	ENVIRONMENTAL ENGINEERING LAB	To characterize the quality of water for suspended matter by physical tests To evaluate the quality of water for hardness, chlorides using chemical analysis To assess the alum dosage for effective sedimentation To measure Dissolved Oxygen concentration to assess the quality of water. To measure the concentration of degradable organic matter
194	16CE C25	CONCRETE LABORATORY	Test different concrete mixing materials and issue test reports Assess the workability of field concrete and guide the site supervisor in preparing a good concrete Perform tests on mechanical characteristics of concrete and issue test reports. Handle NDT equipment's and evaluate concrete by NDT methods
195	16CE C26	THEORY OF STRUCTURES-II	Analyze the indeterminate beams and frames by slope deflection method due to point loads and UDL load system Analyze the indeterminate beams and frames by moment distribution method due to point loads and UDL load system. Analyze the indeterminate beams and frames by Kani's method due to point loads and UDL load system Analyze the indeterminate beams and frames by flexibility matrix method due to point loads and UDL load system Analyze the indeterminate beams and frames by stiffness matrix method due to point loads and UDL load system
196	16CE C27	REINFORCED CONCRETE DESIGN- II	Design and detail the rectangular and trapezoidal combined footing . Design and detail the cantilever and counter fort retaining wall . Design and detail circular and rectangular water tanks Design and detail solid slab, bridges under given condition. Design and detail the various components of T-Beam bridges.
197	16CE C28	WATER RESOURCES ENGINEERING - I	Ability to design a Rain Gauge network, flood estimation, estimate yield from an open well Capability to design canals, Capacity to operate irrigation system efficiently. Select an ideal site for a reservoir, estimate its optimum capacity and regulate a reservoir efficiently Design, Construct and operate a barrage Regulate Canal flows efficiently as an irrigation engineer
198	16CE C29	FOUNDATION ENGINEERING	Compute the stress distribution in the ground under different loading conditions Estimate the bearing capacity of different soils for shallow foundation Design the deep foundation by piles or wells Deal with the field problems in laying cofferdams and different dewatering techniques and sampling methods


PROFESSOR & HEAD
 Department of Civil Engineering
 Janya Bharathi Institute of Technology
 GANDIPET, HYDERABAD-5000 075

			Interpret and implement the Concepts of Cofferdams, Caissons and Timbering of Excavations
199	16CE E04	FINITE ELEMENT METHODS	The fundamentals of FEM, elements of theory of elasticity Principle of minimum potential energy and variation formulation of FEM and analyze simple problems using bar elements The analysis of trusses, beams and rigid jointed plane frames. The formulation of Global stiffness matrix, load matrix and analysis structures using 1 st order triangular elements, isoparametric elements, and quadrilateral elements Application of Axi-Symmetric and Tetra-Hedron elements
200	16CE E05	GEOGRAPHICAL INFORMATION SYSTEM AND REMOTE SENSING	Is able to apply the principles of GIS to various field problems and take decisions under uncertain conditions Is able to understand advantages and disadvantages of using vector GIS and raster GIS Is able to apply the methods of data Compression using GIS. Can perform the data modeling and analysis using GIS Is able to apply the basic principles of Remote Sensing for Watershed modeling, Environmental Modeling and for Watershed Management.
201	16CE E06	ARTIFICIAL NEURAL NETWORKS, FUZZY LOGIC & EXPERT	Have the overall idea & knowledge to employ FL, ANN & ES for specific applications Have fundamental knowledge of ANN. Have rudimentary knowledge of Fuzzy sets & their applications. Have the grasp of Expert System & its applications Apply FL, ANN & ES to the real cases of civil engineering and get the solutions to the problems, with the help of standard software packages
202	16CE C30	SOIL MECHANICS LABORATORY	The basic skills of conducting experiments on Soils for knowing their properties, identifying its type and interpret the results To apply the experimentation skills to the field problems such as site investigations and Soil Exploration techniques.
203	16CE C31	HYDRAULICS AND HYDRAULIC MACHINERY LAB	To compute the open channel rugosity coefficient in uniform flows and Froude number, energy losses in non-uniform flows. To differentiate between uniform, non-uniform flows and flow in curved channel To determine work done by fluid jet on vane, compute work done and draw performance characteristic curves for turbines and centrifugal pumps. To find the discharge between stream lines and pressure variations around an airfoil
204	16CE C32	TRANSPORTATION ENGINEERING LAB	To apply methods for assessing various types of material to be used in the pavement construction To plan for the collection of field data and to present the same data for the analysis and take decisions for smooth movement of the traffic
205	16CE C34	WATER RESOURCES ENGINEERING - II	Analyze and design a non-overflow gravity dam Design a typical earth dam as per criteria. Formulate a spillway proposal with appurtenant energy dissipaters. Prepare a preliminary proposal of hydel plant for a given site. Know about minor irrigation and formulate it. Plan for the river training work, water resources management
206	16CE C35	DESIGN OF STEEL STRUCTURES - I	Attains fundamental knowledge of the design of various Steel Structures, connections and is able to interpret the specifications of relevant codes. Able to design compression members & column bases. Able to understand the behaviour of tension members and its design.


PROFESSOR & HEAD
 Department of Civil Engineering
 Jitanya Bharathi Institute of Technology
 MDIPET, HYDERABAD-5000 075

			Able to understand the classification of beam section, local failure of section and design of flexural members. Able to estimate the loading roof trusses and design of purlins
207	16CE C36	ESTIMATION AND SPECIFICATIONS	Prepare detailed estimates for different structures. Prepare the detailed estimate steel quantities of RCC framed works and to prepare BBS. Do the rate analysis for different items of works of buildings, concrete and bituminous road works. Apply TSDSS and departmental procedures. Work out standard procedure and specifications of construction works
208	16CE E07	ADVANCED REINFORCED CONCRETE DESIGN	Analyse and Design beams curved in plan as per the field requirements. Design simply supported and continuous deep beams. Analyse, design and detail the Bunkers, silos and portal frames. Analyse and design flat slabs and grid slabs using the codal provisions. Predict structural behaviour of Raft, and Pile foundations and design them
209	16CE E08	ADVANCED ENVIRONMENTAL ENGINEERING	Characterize the effluents, analyze the effects of industrial effluents on the human health & thoroughly practice environmental legislation Apply the methods of Industrial waste water management and treatment. Evaluate, monitor and analyze ambient air quality. Apply the methods of air pollution control to field situations. Evaluate the impact of road project, industry and a dam on the surrounding environment
210	16CE E09	GROUND IMPROVEMENT TECHNIQUES	Know the importance of ground improvement techniques and types of techniques for different soils. Apply the various ground improvement techniques to address the field problems. Understand the degree to which soil properties may be improved; and the benefits involved Identify suitable ground improvement technique for specific project and its implications. Design ground improvement techniques as well as be able to advice regarding value engineering to save cost and obtain maximum benefits for the specific project
211	16CE E10	ELEMENTS OF EARTH QUAKE ENGINEERING	Assess the cause of an earthquake , it's magnitude and its effects on structures Apply the concepts of Damped and Un-damped Vibrations to single , two and multi-degree systems and deduce a response spectrum Apply the concepts of Seismic Design Philosophy and Earthquake Resistant Design to Masonry , RC and Steel structures Evaluate the Seismic Performance of Engineered and Non-Engineered Urban and Rural buildings Apply the concepts of Seismic Resistant Construction , Base isolation techniques and other energy dissipating devices and also the concepts of Seismic Retro fitting, use and interpret the knowledge gained from the case studies of performance of buildings during past earthquakes
212	16CE E11	ADVANCED TRANSPORTATION ENGINEERING	Able to apply various materials and methods for soil stabilization of roads. Able to design a Rigid and flexible pavement. Able to evaluate a highway for its distress, skid resistance, structural strength and drainage. Able to assess the capacity and economic viability of a highway and also conduct transport cost-benefit analysis.



PROFESSOR & HEAD
 Department of Civil Engineering
 Janya Bharathi Institute of Technology
 DIPET, HYDERABAD-5000 075

			Able to apply the travel demand management concepts and use computer applications for traffic and transport planning
213	16CE E12	DESIGN AND DETAILING OF IRRIGATION STRUCTURES	Surplus weir Direct sluice Glacis type canal drop Cross regulator Super passage
214	16CE C37	COMPUTER APPLICATIONS LAB	Model and analyse a framed structure and design all its components including isolated footings, using software. Analyse pipe networks and sewer networks using software. Estimate ground water flow head and velocity and also the pollutant concentration in ground water flow, using software. Digitize topo sheets using GIS and also prepare Map overlays using GIS. Analyse a natural slope using slope stability methods and design a cantilever retaining wall using software.
215	16CE E13	DESIGN OF STEEL STRUCTURES -II	Design a welded plate girder for industrial and infrastructural purpose, as per the specifications of relevant codes Design a gantry girder for industrial workshops as per the specifications of relevant codes Design Roller & Rocker bearings for railway bridges Design and detail a deck type riveted plate girder bridge using railway code and bridge rules Design and detail a through type riveted truss girder bridge using railway code and bridge rules
216	16CE E14	ADVANCED STEEL DESIGN	Analyse and design a beam-column and grillage foundation with detailing Learn and apply the design concepts for the design of water tanks To understand the nature of tubular section and their design. To understand the behavior of Bunker's and Silo's and their design. Learn apply basic principles of analysis of transmission towers, arrangement of member and design
217	16CE E15	INDUSTRIAL STRUCTURES	Develop an understanding in basic concepts in the Design of Steel Gantry Girders. Design in accordance with Relevant Indian Standard provisions to ensure safety and serviceability Analyze and design with detailing for Steel Portal and Gable Frames according to specific codal criteria. Differentiate between Bunker and silo, and design the Steel Bunkers and Silos on engineering concepts which are applied in field of Structural Engineering. Understand the theoretical and practical aspects of Design of Steel Chimney along with the design aspects. Analyse and design a pre-engineered industrial building
218	16CE E16	HEALTH MONITORING AND RETROFITTING OF STRUCTURES	Interpret SHM as a way of monitoring the health of a structure using smart materials Select and implement an appropriate vibration based technique for health monitoring of a structure Select and implement an appropriate capacitive sensing technique Perform condition assessment survey of damaged/ existing buildings and to identify possible defects in a concrete structure and suggest necessary repairs Implement various health monitoring techniques for different types of structures for different situations



PROFESSOR & HEAD
Department of Civil Engineering
Chaitanya Bharathi Institute of Technology
GANDIPET, HYDERABAD-5000 075

219	16CE E17	GROUND WATER HYDROLOGY	Assess groundwater potential and head.
			Estimate hydraulic conductivity and storage coefficient for time variant flow.
			Investigate groundwater availability for a given area.
			Plan and design artificial recharge.
			Construct model and analyze groundwater flow.
220	16CE E18	PRE-STRESSED CONCRETE	Students will understand the general mechanism of pre stressed concrete members, types of pre stressing, losses in pre stressing, short and long term deflections in P.S.C members.
			Students will be able to evaluate the behaviour of pre stressed concrete structures,
			Students will be able to analyze and design of pre stressed concrete structures using serviceability limit states.
			Student will be able to analyze and design for shear in P.S.C members.
			Student will be able to analyze the stresses in anchorage zones and design the end anchorages


PROFESSOR & HEAD
 Department of Civil Engineering
 Chaitanya Bharathi Institute of Technology
 GANDIPET, HYDERABAD-5000 075