



Vidya Academy of Science & Technology

(A unit of Vidya International Charitable Trust)

Thalakkottukara PO, Thrissur, Kerala, India, Pin- 680 501

Phone: +91-4885-287751, 287752, Fax: 288366

COURSE OUTCOMES				
Branch: DEPARTMENT OF CIVIL ENGINEERING				
2019 SCHEME				
After the completion of the course the students will be able to				
1	S1	MAT101 LINEAR ALGEBRA AND CALCULUS	MAT101.1	solve systems of linear equations, diagonalize matrices and characterise quadratic forms
			MAT101.2	compute the partial and total derivatives and maxima and minima of multivariable functions
			MAT101.3	compute multiple integrals and apply them to find areas and volumes of geometrical shapes, mass and centre of gravity of plane laminas
			MAT101.4	perform various tests to determine whether a given series is convergent, absolutely convergent or conditionally convergent
			MAT101.5	determine the Taylor and Fourier series expansion of functions and learn their applications.
2	S1	CYT 100 ENGINEERING CHEMISTRY)	CYT100.1	apply the basic concepts of electrochemistry and corrosion to explore its possible applications in various engineering fields.
			CYT100.2	understand various spectroscopic techniques like UV-Visible, IR, NMR and its applications.
			CYT100.3	apply the knowledge of analytical method for characterizing a chemical mixture or a compound. Understand the basic concept of SEM for surface characterisation of nanomaterials.



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			CYT100.4	learn about the basics of stereochemistry and its application. Apply the knowledge of conducting polymers and advanced polymers in engineering.
			CYT100.5	study various types of water treatment methods to develop skills for treating wastewater.
3	S1	EST 110 ENGG.GRAPHICS	EST110.1	draw the projection of points and lines located in different quadrants
			EST110.2	prepare multiview orthographic projections of objects by visualizing them in different positions
			EST110.3	draw sectional views and develop surfaces of a given object
			EST110.4	prepare pictorial drawings using the principles of isometric and perspective projections to visualize objects in three dimensions.
			EST110.5	convert 3D views to orthographic views and vice versa using CAD tools
4	S1	HUN 101 LIFE SKILLS	HUN101.1	define and Identify different life skills required in personal and professional life
			HUN101.2	develop an awareness of the self and apply well-defined techniques to cope with emotions and stress.
			HUN101.3	explain the basic mechanics of effective communication and demonstrate these through presentations.
			HUN101.4	take part in group discussions
			HUN101.5	understand the basics of teamwork and leadership
5	S1	EST 130 BASIC	EST130.1	apply fundamental concepts and circuit laws to solve simple DC electric circuits.



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		ELECTRONICS/ELECTRICAL	EST130.2	develop and solve models of magnetic circuits.
			EST130.3	apply the fundamental laws of electrical engineering to solve simple ac circuits in steady state.
			EST130.4	describe the working of a voltage amplifier and to outline the principle of an electronic instrumentation system.
			EST130.5	explain the principle of radio and cellular communication.
6	S1	CYL 120 ENGINEERING CHEMISTRY LAB	CYL120.1	understand and practice different techniques of quantitative chemical analysis to generate experimental skills and apply these skills to various analyses
			CYL120.2	develop skills relevant to synthesize organic polymers and acquire the practical skill to use TLC for the identification of drugs
			CYL120.3	develop the ability to understand and explain the use of modern spectroscopic techniques for analysing and interpreting the IR spectra and NMR spectra of some organic compounds
			CYL120.4	acquire the ability to understand, explain and use instrumental techniques for chemical analysis
			CYL120.5	learn to design and carry out scientific experiments as well as accurately record and analyze the results of such experiments
7	S1	ESL 130 ELECTRICAL & ELECTRONICS WORKSHOP	ESL130.1	demonstrate safety measures against electric shocks.
			ESL130.2	identify the tools used for electrical wiring, electrical accessories, wires, cables, batteries and standard symbols.

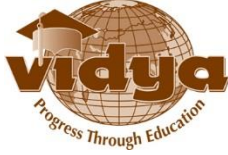


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			ESL130.3	develop the connection diagram, identify the suitable accessories and materials necessary for wiring simple lighting circuits for domestic buildings
			ESL130.4	identify and test various electronic components
			ESL130.5	make use of BIS/IEEE symbols to draw circuit schematics and experiment with and test electronic circuits on board
8	S2	MAT 102 VECTOR CALCULUS, DIFFERENTIAL EQUATIONS & TRANSFORMS	MAT102.1	compute the derivatives and line integrals of vector functions and learn their applications
			MAT102.2	evaluate surface and volume integrals and learn their inter-relations and applications.
			MAT102.3	solve homogeneous and non-homogeneous linear differential equation with constant coefficients
			MAT102.4	compute Laplace transform and apply them to solve ODEs arising in engineering
			MAT102.5	determine the Fourier transforms of functions and apply them to solve problems arising in engineering
9	S2	PHT 110 ENGINEERING PHYSICS	PHT110.1	compute the quantitative aspects of waves and oscillations in engineering systems.
			PHT110.2	apply the interaction of light with matter through interference, diffraction and identify these phenomena in different natural optical processes and optical instruments.
			PHT110.3	analyze the behaviour of matter in the atomic and subatomic level through the principles of quantum mechanics to perceive the microscopic processes in electronic devices.

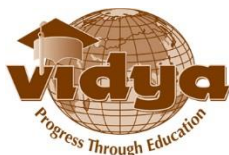


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			PHT110.4	classify the properties of magnetic materials and apply vector calculus to static magnetic fields and use Maxwell's equations to diverse engineering problem
			PHT110.5	analyze the principles behind various superconducting applications, explain the working of solid state lighting devices and fibre optic communication system
10	S2	EST 100 ENGINEERING MECHANICS	EST100.1	recall principles and theorems related to rigid body mechanics
			EST100.2	identify and describe the components of system of forces acting on the rigid body
			EST100.3	apply the conditions of equilibrium to various practical problems involving different force system.
			EST100.4	choose appropriate theorems, principles or formulae to solve problems of mechanics.
			EST100.5	solve problems involving rigid bodies, applying the properties of distributed areas and masses
11	S2	EST 102 BASICS OF COMPUTER PROGRAMMING	EST102.1	analyze a computational problem and develop an algorithm/flowchart to find its solution.
			EST102.2	develop readable C programs with branching and looping statements, which uses Arithmetic, Logical, Relational or Bitwise operators.
			EST102.3	write readable C programs with arrays, structure or union for storing the data to be processed.
			EST102.4	divide a given computational problem into a number of modules and develop a readable multi-function C program by



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				using recursion if required, to find the solution to the computational problem.
			EST102.5	write readable C programs which use pointers for array processing and parameter passing. Develop readable C programs with files for reading input and storing output.
12	S2	EST 120 BASICS OF CIVIL AND MECHANICAL ENGINEERING	EST120.1	recall the role of civil engineer in society and to relate the various disciplines of Civil Engineering with special focus on Building construction and basics of Surveying
			EST120.2	summarize the basic infrastructure services MEP, HVAC, elevators, escalators and ramps and discuss the Materials, energy systems, water management and environment for green buildings.
			EST120.3	analyse thermodynamic cycles and their efficiency for illustrating working of IC Engines.
			EST120.4	explain the basic principles of refrigeration, air conditioning, hydraulic turbines and power transmission elements.
			EST120.5	describe the basic manufacturing, metal joining and machining processes.
			13	S2
HUN102.2	get the capability to analyze, interpret and effectively summarize a variety of textual content.			
HUN102.3	create effective technical presentations.			
HUN102.4	discuss a topic in a group setting and arrive at generalizations/ conclusions.			

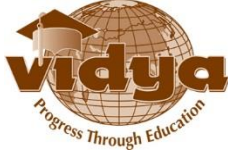


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			HUN102.5	create professional and technical documents with required relevance and clarity.
14	S2	PHL 120 ENGINEERING PHYSICS LAB	PHL120.1	develop analytical/experimental skills and impart prerequisite hands on experience for engineering laboratories
			PHL120.2	understand the need for precise measurement practices for data recording
			PHL120.3	understand the principle, concept, working and applications of relevant technologies and comparison of results with theoretical calculations
			PHL120.4	analyze the techniques and skills associated with modern scientific tools such as lasers and fiber optics
			PHL120.5	develop basic communication skills through working in groups in performing the laboratory experiments and by interpreting the results
15	S2	ESL 120 CIVIL & MECHANICAL WORKSHOP	ESL120.1	name different devices and tools used for civil engineering measurements and Explain the use of various tools and devices for various field measurements
			ESL120.2	demonstrate the steps involved in basic civil engineering activities like plot measurement, setting out operation, evaluating the natural profile of land, plumbing and undertaking simple construction work.
			ESL120.3	choose materials and methods required for basic civil engineering activities like field measurements, masonry work and plumbing and Compare different techniques and devices used in civil engineering measurements



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			ESL120.4	identify Basic Mechanical workshop operations with appropriate Tools and Instruments with respect to the mechanical workshop trades in accordance with the material and Objects.
			ESL120.5	apply appropriate safety measures with respect to the mechanical workshop trades.
16	S3	MAT201 PARTIAL DIFFERENTIAL EQUATION AND COMPLEX ANALYSIS	MAT201.1	understand the concept and the solution of partial differential equation.
			MAT201.2	analyse and solve one dimensional wave equation and heat equation.
			MAT201.3	understand complex functions, its continuity differentiability with the use of Cauchy-Reimann equations
			MAT201.4	evaluate complex integrals using Cauchy's integral theorem and Cauchy's integral formula, understand the series expansion of analytic function.
			MAT201.5	understand the series expansion of complex function about a singularity and Apply residue theorem to compute several kinds of real integrals.
17	S3	CET201 MECHANICS OF SOLIDS	CET201.1	recall the fundamental terms and theorems associated with mechanics of linear elastic deformable bodies.
			CET201.2	explain the behavior and response of various structural elements under various loading conditions.
			CET201.3	apply the principles of solid mechanics to calculate internal stresses/strains, stress resultants and strain energies in structural elements subjected to axial/transverse loads and bending/twisting moments.



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			CET201.4	choose appropriate principles or formula to find the elastic constants of materials making use of the information available.
			CET201.5	perform stress transformations, identify principal planes/ stresses and maximum shear stress at a point in a structural member & Analyse the given structural member to calculate the safe load or proportion the cross section to carry the load safely.
18	S3	CET203 FLUID MECHANICS & HYDRAULICS	CET203.1	students are able to identify or describe the type, characteristics or properties of fluid flow
			CET203.2	students are able to recall the relevant principles of hydrostatics and hydraulics of pipes and open channel
			CET203.3	students are able to estimate the fluid pressure, perform the stability check of bodies under hydrostatic condition
			CET203.4	students are able to compute discharge through pipes by applying hydraulic principles of continuity, energy and/or momentum
			CET203.5	students are able to analyze or compute the flow through open channels, perform the design of prismatic channels
19	S3	CET205 SURVEYING & GEOMATICS	CET205.1	students will be able to get a thorough knowledge about the various surveying techniques
			CET205.2	students will be able to understand the errors associated with survey measurements
			CET205.3	students will be able to understand the technique of triangulation



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			CET205.4	students will gain basic knowledge of remote sensing
			CET205.5	students are able to obtain a basic understanding of the GIS technology
20	S3	MCN201 SUSTAINABLE ENGINEERING	MCN201.1	understand the relevance and the concept of sustainability and the global initiatives in this direction
			MCN201.2	explain the different types of environmental pollution problems and their sustainable solutions
			MCN201.3	discuss the environmental regulations and standards
			MCN201.4	outline the concepts related to conventional and non-conventional energy
			MCN201.5	demonstrate the broad perspective of sustainable practices by utilizing engineering knowledge and principles
21	S3	HUT200 PROFESSIONAL ETHICS	HUT200.1	understand the core values that shape the ethical behaviour of a professional.
			HUT200.2	adopt a good character and follow an ethical life.
			HUT200.3	explain the role and responsibility in technological development by keeping personal ethics and legal ethics.
			HUT200.4	solve moral and ethical problems through exploration and assessment by established experiments.
			HUT200.5	apply the knowledge of human values and social values to contemporary ethical values and global issues.
26	S3	CEL201 CIVIL ENGINEERING	CEL201.1	illustrate ability to organise civil engineering drawings systematically and professionally



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		PLANNING AND DRAFTING LAB	CEL201.2	to understand the principles of planning
			CEL201.3	prepare building drawings as per the specified guidelines.
			CEL201.4	assess a complete building drawing to include all necessary information
			CEL201.5	create a digital form of the building plan using any drafting software
27	S3	CEL203 SURVEY LAB	CEL203.1	students will be able to use conventional surveying tools such as chain/tape and compass for plotting and area determination.
			CEL203.2	students will be able to apply levelling principles in field
			CEL203.3	students will be able to solve triangulation problems using theodolite
			CEL203.4	students will be able to employ total station for field surveying.
			CEL203.5	students will be able to demonstrate the use of distomat and handheld GPS
28	S4	MAT202 PROBABILITY, STATISTICS AND NUMERICAL METHODS	MAT202.1	understand the concept, properties and important models of discrete random variables and, using them, analyse suitable random phenomena.
			MAT202.2	understand the concept, properties and important models of continuous random variables and, using them, analyse suitable random phenomena.
			MAT202.3	perform statistical inferences concerning characteristics of a population based on attributes of samples drawn from the population
			MAT202.4	compute roots of equations, evaluate definite integrals and perform

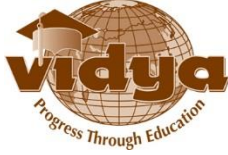


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				interpolation on given numerical data using standard numerical techniques
			MAT202.5	apply standard numerical techniques for solving systems of equations, fitting curves on given numerical data and solving ordinary differential equations.
29	S4	CET202 ENGINEERING GEOLOGY	CET202.1	recall the fundamental concepts of surface processes, subsurface process, minerals, rocks, groundwater and geological factors in civil engineering constructions.
			CET202.2	identify and describe the surface processes, subsurface process, earth materials, groundwater and geological factors in civil engineering constructions.
			CET202.3	apply the basic concepts of surface and subsurface processes, minerals, rocks, groundwater and geological characteristics in civil engineering constructions.
			CET202.4	analyze and classify geological processes, earth materials and groundwater
			CET202.5	evaluation of geological factors in civil engineering constructions.
			30	S4
CET204.2	describe the laboratory testing methods for determining soil parameters			
CET204.3	solve the basic properties of soil by applying functional relationships			
CET204.4	calculate the engineering properties of soil by applying the laboratory test results and the fundamental concepts of soil mechanics			

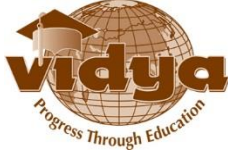


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			CET204.5	analyze the soil properties to identify and classify the soil
31	S4	CET206 TRANSPORTATI ON ENGINEERING	CET206.1	apply the basic principles of Highway planning and design highway geometric elements
			CET206.2	apply standard code specifications in judging the quality of highway materials; designing mixes and pavements
			CET206.3	explain phenomena in road traffic by collection, analysis and interpretation of traffic data through surveys; creative design of traffic control facilities
			CET206.4	understand about railway systems, tunnel, harbour and docks
			CET206.5	express basics of airport engineering and design airport elements
			32	S4
EST200.2	apply design thinking while learning and practicing engineering.			
EST200.3	develop innovative and reliable designs incorporating knowledge in engineering			
EST200.4	apply design thinking techniques to develop sustainable designs			
EST200.5	develop economically viable designs incorporating knowledge in engineering			
33	S4	MCN202 CONSTITUTION OF INDIA	MCN202.1	explain the background of the present constitution of India and features
			MCN202.2	utilize the fundamental rights and duties.
			MCN202.3	understand the working of the union executive, parliament, state executive, legislature and judiciary.



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			MCN202.4	utilize the special provisions and statutory institutions.
			MCN202.5	show national and patriotic spirit as responsible citizens of the country
34	S4	CEL 202 MATERIAL TESTING LAB I	CEL202.1	understanding the behaviour of engineering materials under various forms and stages of loading.
			CEL202.2	characterize the elastic properties of various materials.
			CEL202.3	evaluate the strength and stiffness properties of engineering materials under various loading conditions.
			CEL202.4	improve the future problem solving ability related to material engineering by working as a team and able to present it.
			CEL202.5	reproduce the basic knowledge of mathematics, science and engineering in assessing the quality and suitability of construction materials, structural element, & preparation of test reports as per the IS specification, by inculcating professional and ethical responsibility in the areas of material testing & modern instrument usage
35	S4	CEL204 FLUID MECHANICS LAB	CEL204.1	students will be able to select an appropriate pump/turbine with reference to given application/situation
			CEL204.2	students will be able to estimate the optimum efficiency of a given pump/turbine under different load and (or) speed conditions



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			CEL204.3	students will be able to apply the fundamental principles of fluid mechanics in calculations involving basic flow measuring devices in both closed and open channel flows
			CEL204.4	students will be able to analyse the trends depicted by characteristic curves obtained from the experiments
			CEL204.5	students will be able to predict the stability of a floating vessel following the principles of metacentric height and radius of gyration
36	S5	CET 301 STRUCTURAL ANALYSIS I	CET301.1	apply energy principles to analyse statically determinate structures, beams trusses frames etc.
			CET301.2	identify the problems with static indeterminacy and understand the basic concepts of tackling such problems by means of the method of consistent deformations.
			CET301.3	apply suitable methods of analysis for various types of structures including cables, suspension bridges and arches.
			CET301.4	analyse the effects of moving loads on structures using influence lines.
			CET301.5	apply specific methods such as slope deflection and moment distribution methods of structural analysis for typical structures with different characteristics.
37	S5	CET 303 DESIGN OF	CET303.1	recall the fundamental concepts of limit state design and code provisions for



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		CONCRETE STRUCTURES		design of concrete members under bending, shear, compression and torsion.
			CET303.2	analyse reinforced concrete sections to determine the ultimate capacity in bending, shear and compression.
			CET303.3	design and detail beams, slab, stairs and footings using IS code provisions.
			CET303.4	design and detail columns using IS code and SP 16 design charts.
			CET303.5	explain the criteria for earthquake resistant design of structures and ductile detailing of concrete structures subjected to seismic forces.
38	S5	CET 305 GEOTECHNICAL ENGINEERING II	CET305.1	understand soil exploration methods
			CET305.2	explain the basic concepts, theories and methods of analysis in foundation engineering
			CET305.3	calculate bearing capacity, pile capacity, foundation settlement and earth pressure
			CET305.4	analyze shallow and deep foundations
			CET305.5	solve the field problems related to geotechnical engineering
39	S5	CET 307 HYDROLOGY AND WATER RESOURCES	C304.1	students are able to describe the hydrologic cycle and estimate the different components
			C304.2	students are able to determine crop water requirements for design of irrigation systems
			C304.3	students are able to compute the yield of aquifers and wells.
			C304.4	students are aware of the features of various river training works and stream gauging

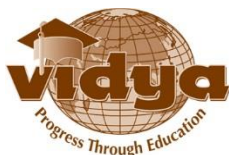


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			C304.5	students are able to estimate the storage capacity of reservoirs and their useful life.
40	S5	CET 309 CONSTRUCTION TECHNOLOGY AND MANAGEMENT	CET309.1	describe the properties of materials used in construction and various elements of building construction
			CET309.2	explain the properties of concrete and its determination
			CET309.3	explain the technologies for construction
			CET309.4	describe the procedure for planning and executing public works
			CET309.5	apply scheduling techniques in project planning and control
41	S5	MCN 301 DISASTER MANAGEMENT	MCN301.1	the students will be able to define disaster and will acquire knowledge on basic terms in disaster management such as Hazard, Risk, crisis, vulnerability, exposure etc.
			MCN301.2	the students will get general ideas about the processes involved in natural and anthropogenic disasters
			MCN301.3	the students will gain the skills and abilities to analyse potential effects of disasters and of the strategies and methods to deliver public health response to avert these effects.
			MCN301.4	the students will understand the concepts of disaster management and measures to mitigate and contain common episodes of disasters.
			MCN301.5	the students will be able to propose, implement and evaluate research on disasters.
42	S5	CEL 331 MATERIAL TESTING LAB II	CEL331.1	at the end of the course the students will be able to acquire the knowledge on standard properties of construction materials as per IS code

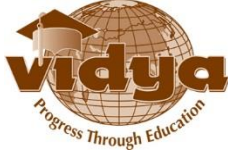


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			CEL331.2	to point out the type of failure by conducting the experiments
			CEL331.3	to determine the load carrying capacity and classify whether these can be used for Engineering purposes
			CEL331.4	to acquaint with the experimental methods to determine the properties of materials such as workability of concrete, particle size distribution of aggregate, bulking of aggregate, initial and final setting time of cement, fineness of cement etc.
			CEL331.5	students will be able to do the concrete mix design.
43	S5	CEL 333 GEOTECHINICAL LAB	CEL333.1	the students will be able to determine engineering properties like shear strength, compressibility etc.
			CEL333.2	the students will be able to determine the physical properties like liquid limit, plastic limit and shrinkage limit
			CEL333.3	the students will be able to determine the coefficient of consolidation, coefficient of permeability of soils this is very much important in settlement and seepage analysis
			CEL333.4	the students will be able to classify the soil according to the physical and engineering properties
			CEL333.5	the students will be able to find out the in-situ moisture content and density of the soils
44	S6	CET 302 STRUCTURAL ANALYSIS II	CET301.1	understand the principles of plastic theory and its applications in structural analysis.
			CET301.2	examine the type of structure and decide on the method of analysis.



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			CET301.3	apply approximate methods of analysis for framed structures to ascertain stress resultants approximately but quickly
			CET301.4	apply the force and displacement method to analyse framed structures
			CET301.5	remember basic dynamics, understand the basic principles of structural dynamics and apply the same to simple structures.
45	S6	CET 304 ENVIRONMENTAL ENGINEERING	CET304.1	students are able to describe the usage of water for various purposes and compute future water demand by considering population.
			CET304.2	students are able to identify different sources of drinking water and to adopt the appropriate source of supply for the town/city under consideration.
			CET304.3	supply good quality water with required quality standards according to client need to rise up quality of life.
			CET304.4	students are able to select water distribution layout depending on size and shape of area and understand the necessity of maintenance.
			CET304.5	students are able to learn technical aspects of drinking water treatment and distribution in an integrated way, paying attention to the choice of technologies and tools.
46	S6	CET 306 DESIGN OF HYDRAULIC STRUCTURES	CET306.1	students are able to understand the various components of diversion head works and are able to do design of irrigation canals
			CET306.2	students are able to design various minor irrigation structures according to the field conditions effectively



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			CET306.3	students become capable of reading working drawings of minor irrigation structures
			CET306.4	students are able to explain the causes of failure and design criteria of different types of dams and will understand about different components of dams like spillways, shafts, stilling basins and galleries
			CET306.5	students are able to perform the stability analysis of gravity dams
47	S6	HUT 300 INDUSTRIAL ECONOMICS & FOREIGN TRADE	HUT300.1	explain the problem of scarcity of resources and consumer behaviour, and to evaluate the impact of government policies on the general economic welfare. (Cognitive knowledge level: Understand)
			HUT300.2	take appropriate decisions regarding volume of output and to evaluate the social cost of production. (Cognitive knowledge level: Apply)
			HUT300.3	determine the functional requirement of a firm under various competitive conditions. (Cognitive knowledge level: Analyse)
			HUT300.4	examine the overall performance of the economy, and the regulation of economic fluctuations and its impact on various sections in the society. (Cognitive knowledge level: Analyse)
			HUT300.5	determine the impact of changes in global economic policies on the business opportunities of a firm. (Cognitive knowledge level: Analyse)
48	S6	CET362 ENVIRONMENT	CET362.1	to Know the concept and steps involved in environmental impact assessment and government notifications related to EIA



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		AL IMPACT ASSESSMENT	CET362.2	to know the various types of environmental pollution.
			CET362.3	to make aware the impact due to various types of pollutants and their assessment technique.
			CET362.4	to get knowledge about various methods of impact assessment and its features
			CET362.5	to understand the application of EIA in various projects and to prepare reports based on EIS.
49	S6	CET 372 FUNCTIONAL DESIGN OF BUILDINGS	CET372.1	to understand the acoustical design concepts and noise control techniques
			CET372.2	to impart the fundamental concepts of natural and artificial lighting designs
			CET372.3	to provide principles of climatic conscious design of buildings with special emphasis on tropical climates.
			CET372.4	to understand the apparent position of sun with respect to earth during different periods of the year and apply it in computation of solar radiation and design of shading devices.
			CET372.5	to understand the concept of passive solar design and apply it in different climatic zones
50	S6	CEL 332 TRANSPORTATI ON ENGINEERING LAB	CEL332.1	students will be able to assess the quality and properties of aggregates used for pavement construction.
			CEL332.2	students will be able to determine CBR value and penetration resistance of soil by laboratory and field tests on soils, which is required for the design of pavements.
			CEL332.3	students will be able to assess the quality and properties of bitumen used for pavement construction.

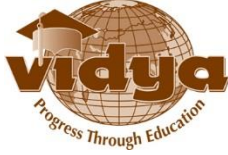


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			CEL332.4	students will acquire knowledge on test procedure for assessment of Specific gravity and moisture sensitivity of bituminous mixes.
			CEL332.5	students will get familiar with the functional evaluation of pavements by using MERLIN apparatus.
51	S6	CEL334 CIVIL ENGINEERINGS SOFTWARE LAB	CEL334.1	the students will get introduced the fundamentals of Civil Engineering drafting and drawing.
			CEL334.2	the students will be able to familiarize with the FEA software packages for analysis and Design of structures
			CEL334.3	the students will be able to understand the Total Station data transfer and interpretation.
			CEL334.4	student will get enable the usage of Project Management Software
			CEL334.5	the students are expected to accomplish the abilities/skills for the use of Civil Engineering Software.
52	S6	CET308 COMPREHENSIV E COURSE WORK	CET308.1	the students will be able to comprehend the questions asked.
			CET308.2	the students will be able to answer the questions with confidence
			CET308.3	to assess the comprehensive knowledge
			CET308.4	to assess the practical knowledge
			CET308.5	to assess the knowledge in civil engineering field
52	S7	CET401 DESIGN OF STEEL STRUCTURES	CET401.1	to explain the behavior and properties of structural steel members to resist various structural forces and actions and apply the relevant codes of practice

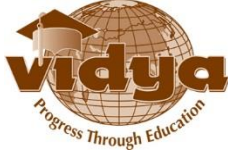


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			CET401.2	analyses the behavior of structural steel members and undertake design at both serviceability and ultimate limit states
			CET401.3	explain the theoretical and practical aspects of Design of composite Steel Structure along with the planning and design aspects
			CET401.4	apply a diverse knowledge of Design of Steel engineering practices applied to real life problems
			CET401.5	demonstrate experience in the implementation of design of structures on engineering concepts which are applied in field Structural Engineering
53	S7	CET463 ADVANCED ENVIRONMENT ENGINEERING	CET463.1	students will be able to explain various secondary treatment technologies for waste water.
			CET463.2	students will be able to explain various tertiary treatment technologies and their applications
			CET463.3	students will be able to understand various advanced oxidation technologies and explain engineering principles to dimension various treatment units
			CET463.4	students will be able to identify appropriate technology for controlling air pollution
			CET463.5	students will be able to understand the fundamental equilibrium and transport properties in adsorption and solve membrane-based separation problems by acquiring in-depth knowledge in the area of membrane separation mechanisms.



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53	S7	CET423 GROUND IMPROVEMENT TECHNIQUES	CET423.1	students will be able to classify different ground improvement methods based on the soil suitability
			CET423.2	an outline of the basic concept/ design aspects of various ground improvement methods could be understood
			CET423.3	students will be able to identify the construction procedure of different ground improvement methods
			CET423.4	choose different application of geosynthetics and soil stabilisation in Ground improvement
			CET423.5	students are able to describe the mechanism behind the ground modification techniques and expected changes in properties of soil due to modification.
54	S7	MCN401 INDUSTRIAL SAFETY ENGINEERING	MCN401.1	students would be able to describe the theories of accident causation and preventive measures of industrial accidents.
			MCN401.2	students would be able to explain about personal protective equipment, its selection, safety performance & indicators and importance of housekeeping
			MCN401.3	students would be able to explain different issues in construction industrie
			MCN401.4	students would be able to describe various hazards associated with different machines and mechanical material handling
			MCN401.5	students would be able to utilize different hazard identification tools in different



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				industries with the knowledge of different types of chemical hazards.
54	S7	CEQ413 SEMINAR	CEQ413.1	identify academic documents from the literature which are related to her/his areas of interest
			CEQ413.2	read and apprehend an academic document from the literature which is related to her/ his areas of interest
			CEQ413.3	prepare a presentation about an academic document
			CEQ413.4	give a presentation about an academic document
			CEQ413.5	prepare a technical report
55	S7	CED415 PROJECT PHASE I	CED415.1	model and solve real world problems by applying knowledge across domains
			CED415.2	develop products, processes or technologies for sustainable and socially relevant applications
			CED415.3	function effectively as an individual and as a leader in diverse teams and to comprehend and execute designated tasks
			CED415.4	plan and execute tasks utilizing available resources within timelines and organize and communicate technical and scientific findings effectively in written and oral forms
			CED415.5	identify technology/research gaps and propose innovative/creative solutions
55	S7	CEL 411 ENVIRONMENTAL ENGINEERING LAB	CET411.1	students will be able to analyse various physico-chemical and biological parameters of water.
			CET411.2	students will be able to compare the quality of water with drinking water



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				standards and recommend its suitability for drinking purposes.
			CET411.3	the students will be able to perform common environmental experiments relating to water and wastewater quality, and know which tests are appropriate for given environmental problems.
			CET411.4	students will be able to demonstrate the ability to write clear technical laboratory reports and to work in groups
			CET411.5	students will be able to understand the impact of water and wastewater treatment on people and the environment and apply ethical issues associated with decision making and professional conduct in the laboratory and field environment.
56	S8	CET402 QUANTITY SURVEYING & VALUATION(QS V)	CET402.1	students will be able to understand the basic terms related to estimation, quantity surveying and contract document
			CET402.2	students will be able to interpret the item of work from drawings and explain its general specification and unit of measurement
			CET402.3	students will be able to make use of given data from CPWD DAR/DSR for calculating the unit rate of different items of work associated with building construction
			CET402.4	students will be able to develop detailed measurement (including BBS) and BoQ of various work like buildings, earthwork for road, sanitary and water supply work
			CET402.5	students will be able to explain various basic terms related to valuation of land and building and develop valuation of

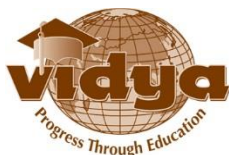


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				buildings using different methods of valuation.
56	S8	CET464 AIR QUALITY MANAGEMENT	CET464.1	students will be able to understand the nature of environment & sources and key effects of air pollutants
			CET464.2	students will have insight into fundamentals of meteorology and behavior of plumes .
			CET464.3	students will be able to understand the dispersion of various air pollutants.
			CET464.4	students will be able to use plume dispersion models, specifically gaussian dispersion model, explore Dispersion problems involving point source and line source, and estimate the plume rise.
			CET464.5	students will be able to analyze the quality of air in a particular region and will be familiar with the various techniques that can be adopted for managing air pollution related problems.
57	S8	CET 436 TRANSPORTATI ON PLANNING	CET436.1	identify the need for transportation planning, the issues and challenges related to transportation and its interaction with urban structure and land use
			CET436.2	apply the concept of travel demand and analyse its role in transportation planning and to apply the concept in systems approach to transportation planning process.
			CET436.3	apply the concept of delineation of study area, sampling of data, and data collection techniques for the four stage planning process and to analyse the techniques for predicting trip generation

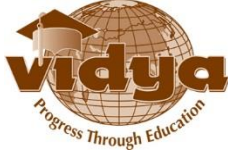


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			CET436.4	apply and analyse the methods for predicting trip distribution, mode split and traffic assignment
			CET436.5	apply the land use transport models and to analyse the sustainable approaches to transportation planning and preparation of comprehensive mobility plan with application of GIS
57	S8	CET456 REPAIR & REHABILITATION OF STRUCTURES	CET456.1	make the students recall the basics ideas and theories associated with Concrete technology and Masonry structures.
			CET456.2	students will be able to understand the need and methodology of repair and rehabilitation of structures, the various mechanisms used, and tools for diagnosis of structures
			CET456.3	students will be able to identify the criterions for repairing / maintenance and the types and properties of repair materials used in site and learn various techniques for repairing damaged and corroded structures
			CET456.4	students will be able to propose whole sum solutions for maintenance/rehabilitation and applying methodologies for repairing structures or demolishing structures.
			CET456.5	students will be able to analyze and assess the damage to structures using various test
58	S8	CET 458 SUSTAINABLE CONSTRUCTION	CET458.1	to study about fundamental features of sustainability
			CET458.2	to identify the properties and uses of sustainable building materials
			CET458.3	to learn about cost effective technologies



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			CET458.4	to know about features of green building rating system
			CET458.5	students will be able to study concepts of BIM
58	S8	CED 416 PROJECT PHASE II	CED416.1	model and solve real world problems by applying knowledge across domains
			CED416.2	develop products, processes or technologies for sustainable and socially relevant applications
			CED416.3	function effectively as an individual and as a leader in diverse teams and to comprehend and execute designated tasks
			CED416.4	plan and execute tasks utilizing available resources within timelines and organize and communicate technical and scientific findings effectively in written and oral forms
			CED416.5	identify technology/research gaps and propose innovative/creative solutions, Organize and communicate technical and scientific findings effectively in written and oral forms



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