

I.T.S Engineering College Greater Noida
Department of Civil Engineering

Session	Course Name	Course Outcomes
1	KOE 036Introduction To Soft Computing	CO1 Comprehend the fuzzy logic and the concept of fuzziness involved in various systems and fuzzy set theory. CO2 Understand the concepts of fuzzy sets, knowledge representation using fuzzy rules, approximate reasoning, fuzzy inference systems, and fuzzy logic. CO3 Describe with genetic algorithms and other random search procedures useful while seeking global optimum in selflearning situations. CO4 Understand appropriate learning rules for each of the architectures and learn several neural network paradigms and its applications. CO5 Develop some familiarity with current research problems and research methods in Soft Computing Techniques.
2	KAS 301Technical Communication	CO1 Students will be enabled to understand the nature and objective of Technical Communication relevant for the work place as Engineers. CO2 Students will utilize the technical writing for the purposes of Technical Communication and its exposure in various dimensions. CO3 Students would imbibe inputs by presentation skills to enhance confidence in face of diverse audience. CO4 Technical communication skills will create a vast know-how of the application of the learning to promote their technical competence. CO5 It would enable them to evaluate their efficacy as fluent & efficient communicators by learning the voice-dynamics.
3	KCE 301Engg Mechanics	CO1 Use scalar and vector analytical techniques for analyzing forces in statically determinate structures. CO2 Apply fundamental concepts of kinematics and kinetics of particles to the analysis of simple, practical problems. CO3 Apply basic knowledge of mathematics and physics to solve real-world problems. CO4 Understand basic dynamics concepts – force, momentum, work and energy. CO5 Understand and be able to apply Newton’s laws of motion.
4	KCE 302Surveying And Geomatics	CO1 Describe the function of surveying and work with survey instruments, take observations, and prepare plan, profile, and cross-section and perform calculations. CO2 Calculate, design and layout horizontal and vertical curves. CO3 Operate a total station and GPS to measure distance, angles, and to calculate differences in elevation. Reduce data for application in a geographic information system. CO4 Relate and apply principles of photogrammetry for surveying. CO5 Apply principles of Remote Sensing and Digital Image Processing for Civil Engineering problems.
5	KCE 303Fluid Mechanics	CO1 Understand the broad principles of fluid statics, kinematics and dynamics. CO2 Understand definitions of the basic terms used in fluid mechanics. CO3 Understand classifications of fluid flow. CO4 Apply the continuity, momentum and energy principles. CO5 Apply dimensional analysis.
6	KNC 301Computer System Security	CO1 To discover software bugs that pose cyber security threats and to explain how to fix the bugs to mitigate such threats CO2 To discover cyber attack scenarios to web browsers and web servers and to explain how to mitigate such threats CO3 To discover and explain mobile software bugs posing cyber security threats, explain and recreate exploits, and to explain mitigation techniques. CO4 To articulate the urgent need for cyber security in critical computer systems, networks, and world wide web, and to explain various threat scenarios CO5 To articulate the well known cyber attack incidents, explain the attack scenarios, and explain mitigation techniques
7	KNC402Python Programming	CO1 Able to read and write simple Python programs. CO2 Able to develop Python programs with conditionals and loops. CO3 Able to define Python functions and to use Python data structures — lists, tuples, dictionaries. CO4 Able to do input/output with files in Python. CO5 Able to do searching, sorting and merging in Python.
8	KCE401Materials, Testing & Construction Practices	CO1 Identify various building materials and to understand their basic properties. CO2 Understand the use of non-conventional civil engineering materials. CO3 Study suitable type of flooring and roofing in the construction process. CO4 Characterize the concept of plastering, pointing and various other building services. CO5 Exemplify the various fire protections, sound and thermal insulation techniques, maintenance and repair of buildings.
9	KVE401UHVPE	CO1 Understand the significance of value inputs in a classroom, distinguish between values and skills, understand the need, basic guidelines, content and process of value education, explore the meaning of happiness and prosperity and do a correct appraisal of the current scenario in the society. CO2 Distinguish between the Self and the Body and understand the meaning of Harmony in the Self the Co-existence of Self and Body. CO3 Understand the value of harmonious relationship based on trust, respect and other naturally acceptable feelings in human-human relationships and explores their role in ensuring a harmonious society. CO4 Understand the harmony in nature and existence, and work out their mutually fulfilling participation in the nature. CO5 Distinguish between ethical and unethical practices, and start working out the strategy to actualize a harmonious environment wherever they work.
10	KAS403Maths III	CO1 The idea of partial differentiation and types of partial differential equations. CO2 The idea of classification of second partial differential equations, wave, heat equation and transmission lines. CO3 The basic ideas of statistics including measures of central tendency, correlation, regression and their properties. CO4 The ideas of probability and random variables and various discrete and continuous probability distributions and their properties. CO5 The statistical methods of studying data samples, hypothesis testing and statistical quality control, control charts and their properties.
11	KCE403Hydraulics & Hydraulic Machines	CO1 Apply their knowledge of fluid mechanics in addressing problems in open channels. CO2 Apply their knowledge of fluid mechanics in addressing problems in energy-depth relationship, measurement of discharge and velocity. CO3 Solve problems in uniform, gradually and rapidly varied flows in steady state conditions. CO4 Apply their knowledge of fluid mechanics in addressing problems related to impulse momentum equation and its impact on jets. CO5 Have knowledge in hydraulic machineries like pumps and turbines.

12	KCE402Introduction to Solid Mechanics	CO1 Describe the concepts and principles of stresses and strains. CO2 Analyze solid mechanics problems using classical methods and energy methods. CO3 Analyze structural members subjected to combined stresses. CO4 Calculate the deflections at any point on a beam subjected to a combination of loads. CO5 Understand the behavior of columns, springs and cylinders against loads.
13	KCE 501Geotechnical Engineering	CO1 Classify the soil and determine its Index properties. CO2 Evaluate permeability and seepage properties of soil. CO3 Interpret the compaction and consolidation characteristics & effective stress concept of soil. CO4 Determine the vertical and shear stress under different loading conditions and explain the phenomenon of soil liquefaction. CO5 Interpret the earth pressure and related slope failures.
14	KCE 502Structural Analysis	CO1 Explain type of structures and method for their analysis CO2 Analyze different types of trusses for member forces. CO3 Compute slope and deflection in determinate structures using different methods. CO4 Apply the concept of influence lines and moving loads to compute bending moment and shear force at different sections. CO5 Analyze determinate arches for different loading conditions.
15	KCE 503Quantity Estimation and Construction Management	CO1 Understand the importance of units of measurement and preliminary estimate for administrative approval of projects. CO2 Understand the contracts and tender documents in construction projects. CO3 Analyze and assess the quantity of materials required for civil engineering works as per specifications. CO4 Evaluate and estimate the cost of expenditure and prepare a detailed rate analysis report. CO5 Analyze and choose cost effective approach for civil engineering projects.
16	KCE 051Concrete Technology	CO1 Understand the properties of constituent material of concrete. CO2 Apply admixtures to enhance the properties of concrete. CO3 Evaluate the strength and durability parameters of concrete. CO4 Design the concrete mix for various strengths using difference methods. CO5 Use advanced concrete types in construction industry
17	KCE 055Engineering Hydrology	CO1 Understand the basic concept of hydrological cycle and its various phases. CO2 Understand the concept of runoff and apply the knowledge to construct the hydrograph. CO3 Apply the various methods to assess the flood. CO4 Assess the quality of various forms of water and their aquifer properties. CO5 Understand the well hydraulics and apply ground water modelling techniques.
18	KNC 501Constitution of India, law and Engineering	CO1 Identify and explore the basic features and modalities about Indian constitution. CO2 Differentiate and relate the functioning of Indian parliamentary system at the center and state level. CO3 Differentiate different aspects of Indian Legal System and its related bodies. CO4 Discover and apply different laws and regulations related to engineering practices. CO5 Correlate role of engineers with different organizations and governance models
19	KCE 601Design of Concrete Structures (DCS)	CO1: Analyse and Design RCC beams for flexure by IS methods. CO2: Analyse and Design RCC beams for shear by IS methods. CO3: Analyse and Design RCC slabs and staircase by IS methods. CO4: Design the RCC compression members by IS methods. CO5:Design various types of footings and cantilever retaining wall
20	KCE 602Transportation Engineering (TE)	CO 1: Understand the history of road development , their alignment & Survey. CO 2: Design the various geometric parameters of road. CO 3: Study the traffic characteristics & design of road intersections & signals. CO 4: Examine the properties of highway materials & their implementation in design of pavements. CO 5: Learn methods to construct various types of roads.
21	KCE 603Environmental Engineering (EE)	CO 1. Assess water demand and optimal size of water mains. CO 2. Layout the distribution system & assess the capacity of reservoir. CO 3. Investigate physical, chemical & biological parameter of water. CO 4. Design treatment units for water and waste water. CO 5. Apply emerging technologies for treatment of waste water.
22	KCE 062River Engineering (RE)	CO 1. Explain river morphology and its classification. CO 2. Explain hydraulic geometry and behavior of river. CO 3. Explain socio-cultural influences and ethics of stream restorations. CO 4. Analyze flow and sediment transport in rivers and channels. CO 5. Design guide band, embankments and flood protection systems.
23	KOE 066GIS & Remote Sensing (GIS)	CO 1. Understand about the principles of Remote Sensing and its advantages and limitations. CO 2. Retrieve the information content of remotely sensed data. CO 3. Apply problem specific remote sensing data for engineering applications. CO 4. Analyze spatial and attribute data for solving spatial problems. CO 5. Create GIS and cartographic outputs for presentation
24	KNC602Indian Traditions, Cultural And Society	CO 1. The course aims at imparting basic principles of thought process, reasoning and inference to identify the roots and details of some of the contemporary issues faced by our nation and try to locate possible solutions to these challenges by digging deep into our past. CO 2.To enable the students to understand the importance of our surroundings and encourage the students to contribute towards sustainable development. CO 3.To sensitize students towards issues related to 'Indian' culture, tradition and its composite character. CO 4.To make students aware of holistic lifestyles of Yogic-science and wisdom capsules in Sanskrit literature that are important in modern society with rapid technological advancements and societal disruptions. CO 5.To acquaint students with Indian Knowledge System, Indian perspective of modern scientific worldview and basic principles of Yoga and holistic health care system.
25	KHU702Project Management And Entrepreneurship	CO 1. Understand the theories of entrepreneurship and Entrepreneurial Development Programmes. CO 2.Create innovative business ideas and market opportunities. CO 3.Understand the importance of Project Management and Project's life cycle CO 4. Analyze Project Finance and project report. CO 5. Evaluate Social Sector Perspectives and Social Entrepreneurship.

26	KOE074Renewable Energy Resources	<p>CO 1. Distinguish about different types of renewable and nonrenewable energy resources and review their advantages and disadvantages. Also demonstrate the working and limitations of various solar cells, solar arrays and solar cell power plants</p> <p>CO 2. Discuss the solar radiation and understand the working of flat plate and concentrating collectors. Also explain the working of various solar thermal power plants and thermal energy storage devices.</p> <p>CO 3. Identify the types of geothermal resources, its impact on environment and interpret the geothermal to electrical & nonelectrical energy conversion. Also compare the working, performance and limitations of MHD Power Plants & different types of fuel cells.</p> <p>CO 4. Interpret the thermo-electrical power conversion and thermionic power conversion and explain wind energy, energy estimation of wind, types of rotors and energy conversion systems.</p> <p>CO 5. Explain the availability of forms of biomass and their conversion to energy. Also explain the working principle of ocean thermal energy, wave energy, tidal energy and waste recycling plants</p>
27	KCE074Solid Waste Management	<p>CO 1. Understand the concept of solid waste management.</p> <p>CO 2. Explain handling and processing of solid waste.</p> <p>CO 3. Apply the concept of landfilling for disposal of solid waste.</p> <p>CO 4. Design composting and other solid waste conversion units.</p> <p>CO 5. Understand the various hazardous waste, risk assessment and legislation.</p>
28	KCE075Design Of Steel Structures	<p>CO 1. Understand properties of steel and types of loads acting on steel structures.</p> <p>CO 2. Design welded and bolted type of connections for elementary steel structures.</p> <p>CO 3. Design tension members for elementary steel structures.</p> <p>CO 4. Design compression members such as simple columns, braced and latticed columns and column bases.</p> <p>CO 5. Design flexural members such as beams, purlins and girders.</p>
29	KHU 801Rural Development: Administration And Planning	<p>CO 1. Understand the concepts , basics and importance of rural development.</p> <p>CO 2. Recognize and acquire knowledge of pre and postindependence rural development programs.</p> <p>CO 3. Understand the importance, structure, significance of Panchayati raj and rural administration.</p> <p>CO 4. Understand about the need and importance of human resource development in rural sector</p> <p>CO 5. Analyze the importance of rural industrialization and Entrepreneurship.</p>
30	KOE 085Quality Management	<p>CO 1. Describe the concepts of quality management system in order to manage a product quality.</p> <p>CO 2. Describe the effective organizational structure and the methods of managing the economic and the human aspects in controlling the quality of a product.</p> <p>CO 3. Demonstrate the application of Statistical Quality Control techniques in managing a product quality proactively.</p> <p>CO 4. Describe the various techniques for the evaluation and the improvement of reliability and maintainability as well as the motivational techniques (zero defects, quality circles) for the adaptability of a new quality control system.</p> <p>CO 5. Describe the ISO 9000 Series, Taguchi method and JIT in improving a product quality.</p>
31	KOE098Human Values in Buddha and Jain Darshan	<p>CO 1. Understand the basic concepts of Bauddha and Jain Darshan.</p> <p>CO 2. Understand the human being, the needs and activities of human being through Bauddha and Jain Darshan.</p> <p>CO 3. Understand the whole existence.</p> <p>CO 4. Understand the role of human being in the entire existence, thus getting clarity about values at all levels of living and human conduct.</p> <p>CO 5. Understand the foundation of human society and human tradition.</p>