

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

Session	Course Name	Course Outcomes
1	RCE-303Fluid Mechanics (FM)	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 Understand and apply the continuity, momentum and energy principles. CO5 Understand and apply dimensional analysis.
2	RCE-301Building materials and construction (BMC)	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 protection, sound and thermal insulation techniques, maintenance and repair of buildings.
3	RCE-302Surveying-I	CO1. Demonstrate familiarity with different types of surveys. CO2. Demonstrate familiarity with various surveying instruments such as chain, compass and theodolite. CO3. Demonstrate understanding of the procedure and principle of levelling. CO4. Demonstrate understanding of triangulation and traversing. CO5. Understand the concept of circular curves, transition curves, etc. and the procedure for layout.
4	RCE403 Structural Analysis - I	CO 1. Introduction to structural analysis and various classifications of structure CO 2. Introduction and analysis of trusses members. CO 3. Learning the basics principal involved in structural analysis. CO 4. To Know the ILD and its application in structural analysis CO 5. Introduction to the arches and its applications.
5	RCE402Geo- Informatics	CO 1. Know the Various techniques of Aerial Photogrametry. CO 2. Know the concept of Remote Sensing. CO 3. know the various techniques of Digital Image Processing. CO 4. Know in detail about Geographic Information System. CO 5. Know the techniques of Global Positioning System.
6	RVE401UHVPE	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.
7	RAS401Material Science	CO 1. understand the importance of material in History along with the basic knowledge of crystal structure and system. CO 2. understand the nature of the materials along with its mechanical properties. To understand the importance of the Phase diagram and Iron Carbon diagram. CO 3. understand the importance of Heat treatments along with TTT diagram. CO 4. understand the importance of Magnetical and Electrical properties of the Material along with semi conductors. CO 5. understand the importance of Ceramics and Plastics in day to day life.
8	RCE401Hydraulics & 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.
9	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.
10	RCE 501Geotechnical Engineering (GE)	CO-1 Classify the soil and determine its Index properties. CO-2 Evaluate permeability and seepage properties of soil. CO-3 Interpret the compaction and consolidation characteristics & effective stress concept of soil. CO-4 Determine the vertical and shear stress under different loading conditions and explain the phenomenon of soil liquefaction.
11	RCE 502Design of Structure -1 (DOS)	CO1. Understand the properties and role of various constituent materials used in concrete making. CO2. Understand the properties of concrete and various design mix techniques for concrete. CO3. Apply the fundamental concepts, techniques in analysis and design of reinforced concrete elements i.e. beam & slab. CO4. Apply the design principles by undertaking simple design examples. CO5. Apply the various codal requirements related to RC members i.e. slab &
12	RCE 503Quantity Estimation and Man	CO-1 Understand the importance of units of measurement and preliminary estimate for administrative approval of projects. CO-2 Understand the contracts and tender documents in construction projects. CO-3 Analyze and assess the quantity of materials required for civil engineering works as per specifications. CO 4 Evaluate and estimate the cost of expenditure and prepare a detailed rate analysis report. CO-5 Analyze and choose cost effective approach for civil engineering projects.
13	RCE 052Concrete Technology (CT)	CO1: To understand the basics of cement manufacturing, Aggregate and Water used in Concrete. CO2: To understand the admixtures used of concrete manufacturing and various other cementing materials. CO3: To understand the calculations needed of concrete manufacturing. CO4: To understand the test and terminology needed of concrete manufacturing. CO5: To understand the various other type of concrete manufacturing.

14	RAS 601Industrial Management	CO1: Introduce the basic knowledge of production and productivity components of an industry and explain the various forms of industrial ownerships. CO2: Identify and model various functions of industrial process and support condition that act on management systems and introduce the concept of human resource management. CO3: Introduce the basic concept of work study and inventory management to the reducing and controlling cost of products. CO4: Introduce the basic concepts and laws of quality control and identify the various properties of TQM. CO5: Explain the project management and working of PERT/CPM.
15	RCE 601Design of Structure-2	CO 1: understand about various design philosophies for the design of reinforced structure and also designing by using WSM. CO 2: understand the behaviour of RCC beam in shear, development length, anchorage bond and flexural bond. CO 3: understand the design procedure of one way and two way slab with lintels, staircase and behaviour under limit of serviceability. CO 4: understand the design procedure of columns. CO 5: understand the design procedure of footing, retaining walls.
16	RCE 602Environmental Engineering-2	CO 1. understand about population forecasting, demands and transmission of water. CO 2. understand about distribution methods, layout and its capacity calculation. CO 3. understand the basic properties of water and waste water. CO 4 understand and design various units involved in a water treatment plant. CO 5. understand design various units involved in a waste water treatment plant.
17	RCE 603Transportation Engineering	CO 1. learn the history of transportation, different road plans Geometric design and features of roads CO 2. Analysis Geometric design and features of roads, Traffic engineering and its characteristics CO 3. learn design of pavements and its types CO 4. learn various methods of construction of flexible and rigid pavement CO 5. learn construction, surface dressing, bituminous carpeting, bituminous bound Macadam and asphaltic concrete.
18	RCE 062Integrated Waste Management	CO 1. Introduction to solid waste management and its various elements. CO 2. Introduction to municipal solid waste and its decomposition process. CO 3. Learning the basics manuals and composting techniques of MSWM. CO 4. Know the construction and demolition rules and its beneficial roles in reuse. CO 5. Introduction to E- waste and Hazardous waste management techniques.
19	RUC 601Cyber security	CO-1: understand the core information system, its development process, information assurance (IA) principles, various threats to information system and need of information security. CO-2: understand the security issues associated with various applications and associated data, various threats and be able to identify the key components of cyber security network architecture, apply cyber security architecture principles. CO-3: understand the process of developing the secure information system and various security issues associated with it. CO-4: understand the need of different security policies, their development, review process and the security concerns in cloud, mobile, SCM, outsourcing etc. CO-5: have the awareness about information security standards, cyber crimes, Cyber Laws, Intellectual Property rights and various laws related to software's and semiconductors.
20	ROE074Understanding the human being comprehensively human aspiration and its fulfillment.	CO1 Understand the universal nature of human being and relatedness to others. CO2 Understand the human aspirations, goal, activities and purpose of life. CO3 Understand the harmony in self and nature CO4 Understand human tradition and its various attributes. CO5 Develop sustainable solution to the problems of society and nature.
21	RCE 076Railway, Airport & Water Ways	CO1 Explain the importance of railway infrastructure. CO2 Identify the factors governing design of railway infrastructures. CO3 Analyse and design the railway track system. CO4 Understand the concepts of airport engineering and design components of airport. CO5 Associate with the concepts of water transport system.
22	RCE 074River Engineering	CO1 The students will be familiar with the Notation and techniques that will help in analysing and various techniques help him to understand and apply. CO2 The students will be familiar with the various river behaviours their calculations. CO3 The students will be familiar with the various cultures and calculate their effects on rivers. CO4 The students will be familiar with the various Methods of analysis and their applications in the practical problems. CO5 The students will be familiar with the various phenomenon of river training their types and analyse them.
23	RCE-701Design of structures-III	CO1 Understand properties of steel and types of loads acting on steel structures. CO2 Design welded and bolted type of connections for elementary steel structures. CO3 Design tension members for elementary steel structures. CO4 Design compression members such as simple columns, braced and latticed columns and column bases. CO5 Design flexural members such as beams, purlins and girders.
24	RCE-702Water Resource Engineering	CO1 Explain the application of water in different irrigation methods CO2 Design the canals and drainage sections. CO3 Design the regulatory and river training works. CO4 Design the weir, barrages and cross drainage works. CO5 Design the dams, spillways and explain the generation of hydroelectric power.
25	ROE086Renewable Energy Resources	CO1 To introduce students about the various resources of non-conventional energy and the construction and working concepts of solar cell. CO2 To introduce students about the concept of solar thermal energy and their applications. CO3 To introduce students about the concept of geothermal energy and the principle of operation of magneto-hydrodynamics and fuel cells. CO4 To introduce students about the concept of thermo electrical and thermionic conversions. Also, help students in understanding the importance of wind energy and their limitations. CO5 To introduce students about the concept of bio-mass, ocean-thermal energy and to the concepts of waves and tidal waves.
26	RCE 084Solid Waste Management	CO 1. To Know and understand the Various classification and collection techniques of solid waste management CO 2. To Know and understand the collection and transportation techniques of solid waste management CO 3. To understand and design the land filling CO 4. To understand and design the composting CO 5. To understand about hazardous waste, e waste and biological waste
27	RCE 088Earthquake Resistant Design of Structure	CO 1: To understand the natural phenomena of earthquakes, types, intensity and characteristics CO 2: To understand the basics of response of structure, modeling and dynamics related to earthquakes. CO 3: To understand and calculate the dynamics of multi degree freedom and idealize its seismic response CO 4: To understand the design procedure of an earthquake resistant building or structure as per Indian standards. CO 5: To learn the various code provisions with respect to the earthquake design of buildings and introduction to machine foundation and block foundations