Koneru Lakshmaiah Education Foundation
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Department of Civil Engineering

Program: B.Tech-Civil Engineering

Academic Year 2024-25

Course Code	Course Name	Co No	Description of the course Out come
23MT1001	LACE	CO1	Apply matrix algebra concepts to solve system of linear equations.
		CO2	Apply multivariate differential calculus to find extremum of functions and solve differential equations.
		CO3	Solve improper integrals using beta and gamma functions and also evaluate double and triple integrals.
		CO4	Evaluate line, surface and volume integrals by vector calculus concepts.
23ME1002	EGP	CO1	"Model Engineering Curves in engineering Practice, Conic sections and special curves, scales both manually and using computer aided design tool (CAD).
		CO2	"Project points, lines and planes in first angle third angle both manually and using CAD.
		CO3	"Project solids and generate the sectional views of solids, development of surfaces of regular solids both manually and using CAD.
		CO4	"Convert orthographic projections to create isometric view and isometric view to orthographic projection both manually and using CAD.
23UC0026	HV	CO1	The student will understand about value, human values and develop right understanding of human values in personal and professional life.
		CO2	The student will understand about self, others and human-human relationship in individual, family, society and nature.
		CO3	Student will apply the acquired knowledge in the dimensions of the biological, sociological, psychological and legal aspects of gender equality at all four orders of living.
		CO4	Student will be able to analyze how the human values and gender equality will be helping individual in maintaining professional ethics for harmony at all orders of living

23UC0018	FOM	CO1	"Apply matrix theory to solve system of linear equations."
		CO2	Apply trigonometric identities to solve trigonometric equations and also predict the data by using concepts combinatory.
		CO3	Apply calculus concept to determine areas and volumes and also solve differential equations.
		CO4	Apply statistical methods to find central tendency of the given data and also find directional ratios by vector algebra concepts.
24UC0017	IKS	CO1	Apply logical reasoning principles and problem-solving strategies to solve related Shakuntala Devi Puzzles.
		CO2	Apply the concept of reasoning to solve problems based on Clocks, Calendars, Cubes, Deductions, logical connectives, Arrangements.
		CO3	Understand the interdisciplinary nature of Indian philosophy, mathematics, Indian mathematicians and their significant contributions to global mathematics.
		CO4	Apply the Vedic Maths sutras in Addition, Subtraction, Multiplications and Division.
23MT2003	MMNM	CO1	Modeling and solution of algrebraic and transcendental equations:
		CO2	Apply different numerical techniques for solving first order ordinary differential equations.
		CO3	Apply Legranges method to solve the linear partial differential equations..
		CO4	Apply the method of separation of variables for solving the applications of partial differential equations
22CE1201	EGG	CO1	"Understand the significance of engineering geology, basics of geological processes that modify the surface of the earth, earthquakes, landslides"
		CO2	"Understand the basics of minerals and rocks, geological structures exhibited by rocks and their influence ,"
		CO3	" Apply the geological conditions to identify suitable site for civil engineering projects."
		CO4	"Understanding the geological conditions to identify potential sites for groundwater, sites for dam and reservoir and tunnels."
		CO5	The study of how Earth’s materials, structures, processes, and organisms have changed over time
24SC1204	DSP	CO1	Analyze the efficiency of the algorithms
		CO2	Implement and evaluate Linear Data

			Structures and Demonstrate their applications.
		CO3	Implement and evaluate tree data structures and understand hashing techniques
		CO4	Apply graphs to solve problems.
		CO5	Design, Develop and evaluate common practical applications for linear and nonlinear data structures.
		CO6	Analyses requirements and design to implement lab-based project with SDLC in a group of students and Apply the data structure concepts to write programs
22UC0021	SIL	CO1	"Extension Activities and Social Outreach activities (ESO)"
		CO2	"Technology Clubs (TEC)"
		CO3	"Liberal arts, (TEC)" creative arts and hobby clubs (LCH)"
		CO4	Innovation, Incubation & Entrepreneurship (IIE)
		CO5	Health & Well Being (HWB)
24IE2040	SIP	CO1	"Remember the fundamentals of the science of water cycle along with powerful tools that students can use to diagnose the health of the local water cycle as well as develop targeted action plans to restore the local natural water cycle and bring water prosperity"
		CO2	"Remember the water sustainability and water resilience of village, city, residential facilities and households using multi-level water scorecards"
		CO3	"Apply the design thinking positive action plan for a village, campus, residential facility and community neighbourhood."
		CO4	"Applying the water positive solutions within an urban watershed, a rural watershed, residential institutional and corporate community "
24MT2019	PAS	CO1	Summarize the data using frequency distributions, diagrams, and compute central tendency and dispersion measures including coefficient of variation.
		CO2	Analyze the relationships using correlation and regression methods for grouped, ungrouped, and rank data, and apply linear/non-linear regression models.
		CO3	Apply probability theory, theorems, and standard discrete and continuous distributions (binomial, Poisson, normal) to solve real world problems.
		CO4	Perform hypothesis testing by applying large

			and small sample tests, t-tests, Chi-square tests, and ANOVA for statistical inference.
24CE2103	SUR	CO1	Apply the knowledge of plane surveying for the computation of bearings in a traverse.
		CO2	Calculate the difference in elevation by using differential leveling techniques and prepare a contour plan.
		CO3	Compute the area of field and volume of earthwork.
		CO4	Calculate the height of the building by using a theodolite and tacheometric survey, and total station surveying
		CO6	operate modern surveying instruments such as total stations, GPS, levels
24CE2105	SM	CO1	Understand the stress-strain behavior of deformed bodies and Elastic constants and their relationships.
		CO2	Applying the concepts of statically determinate beams subjected to with various loads.
		CO3	Apply the concepts of Shear stress, bending stress and stress transformations in flexural members.
		CO4	Apply the concepts of stability and load-carrying capacity on columns and torsional deformation of shafts.
		CO5	Analyze the mechanical properties of various materials through experimental verification.
24CE2102	FMH	CO1	Applying properties of fluid and conservation laws to real-world problems.
		CO2	Applying properties of fluid and conservation laws fluid flowing through pipe.
		CO3	Analysis fluid properties in open channel flow.
		CO4	Analysis of specific energy curve in open cannel flow
		CO5	Illustrate the experimental procedure and interpretation of results by applying properties of fluid through flow through pipes and open channel flow.
24CE2104	BMPD	CO1	"Understand different types of buildings, building components along with materials used for the construction of buildings"
		CO2	Understand building bye-laws for planning and construction of buildings
		CO3	" Understand different types of equipment used in construction projects and management of construction projects"
		CO4	Apply the techniques required for construction project management.
		CO5	Apply the principles and guidelines

			proposed by building regulatory bodies to develop the plan of a building
24SDCE01	VMSD	CO1	Understand the fundamentals of architectural planning, including Vastu principles and spatial arrangement.
		CO2	Demonstrate detailed 2D architectural drawings of residential buildings, including walls, staircases, and floors.
		CO3	Demonstrate the placement of components such as doors, windows, furniture, and sanitary fittings in a layout.
		CO4	Generate front elevation views and apply dimensioning techniques in architectural drawings using AutoCAD.
		CO5	Prepare and finalize construction-ready sheets for printing and presentation using CAD tools
24UC0022	SIL	CO1	Extension Activities and Social Outreach activities (ESO)
		CO2	Technology Clubs (TEC)
		CO3	Liberal arts, creative arts and hobby clubs (LCH)
		CO4	Innovation, Incubation & Entrepreneurship (IIE)
		CO5	Health & Well Being (HWB)
24SP2102	BASKETBALL	CO1	Introduction & Basics This unit introduces players to the game with a court tour, a rules quiz, and team role play. It builds foundational skills through cone dribbling, crossover drills, dribble relays, and essential passing activities like passing in pairs, circles, and pass & move drills."
23UC0013	GLBCP	CO1	Codechef Weekly Contest
		CO2	Solve roadmap to 3 star problems
OEAG0002	ACP	CO1	"Basics of Agronomy & Crop Production: Agronomy Tillage types, modern tillage, seed quality, sowing methods. scope, agro-climatic zones, crop classification. Crop growth, plant density, cropping systems & rotations."
		CO2	"Soil, Water & Nutrient Management: Soil fertility, productivity, organic matter & conservation. Essential nutrients, manures, fertilizers, INM, green manures. Dryland farming, watershed, irrigation basics & soil moisture constants."
		CO3	"Weed Science & Sustainable Farming: Weed importance, classification, competition & allelopathy. Weed management principles, methods & herbicides. Sustainable crop production, harvesting, threshing & post-

			harvest practices."
		CO4	"Major Field Crops (Rice, Maize, Wheat, Pulses): Rice ecology, nutrient/water/weed management & cropping systems. Maize & wheat: origin, climate, production practices. Pulses & pigeonpea: importance, constraints & complete production technology."
OEAD0001	FUNDAMENTALS OF BIG DATA	CO1	Illustrate the concepts of big data, Initial exploration of analysis of data and Data visualization.
		CO2	Implement Initial exploration of data and advanced data analytics by using R
		CO3	"Apply advanced algorithms & Statistical modeling for big data using HDFS, HIVE."
		CO4	"Apply advanced SQL functions and Pig tools for common deliverables of analytics life cycle project."
OECS0007	FUNDAMENTALS OF DBMS	CO1	"Illustrate the functional components of Advanced DBMS and Design an ER Model for a database.
		CO2	"Design a relational model for a database & Implement SQL concepts and relational algebra.
		CO3	"Implement PL/SQL programs, normalization techniques, indexing to construct and access database
		CO4	"Analyze the importance of transaction Processing, concurrency control and recovery techniques.
OEEE0013	RER	CO1	Understand the different solar thermal applications and solar photovoltaic cells
		CO2	"Understand the operation of wind turbine ,different types of wind turbines and wave energy
		CO3	Understand the energy conversion of Tidal, ocean thermal and various the geo thermal power plants
		CO4	Understand the operation of Bio energy conversion method and the different bio gas plants
OEPY0001	AOC	CO1	Understand stereoisomerism and racemic modification of compound
		CO2	Illustrate stereospecific reactions and its nomenclature of given organic compounds
		CO3	Outline the preparation, properties and nomenclature of heterocyclic compounds
		CO4	Relate the synthesis and medicinal uses of different organic compounds and some name reactions
23LE1003	LACFE	CO1	"Apply matrix algebra concepts to solve system of linear equations."

		CO2	"Apply multivariate differential calculus to find extremum of functions and solve differential equations. "
		CO3	"Solve improper integrals using beta and gamma functions and also evaluate double and triple integrals."
		CO4	"Evaluate line, surface and volume integrals by vector calculus concepts. "
24CE2105L	SM	CO1	" Understand the stress-strain behavior of deformed bodies and Elastic constants and their relationships.
		CO2	Applying the concepts of statically determinate beams subjected with various loads.
		CO3	Apply the concepts of Shear stress, bending stress and stress transformations in flexural members.
		CO4	"Apply the concepts of stability and load-carrying capacity columns and torsional deformation of shafts."
		CO5	Analyze the mechanical properties of various materials through experimental verification.
24CE2103L	SUR	CO1	Apply the knowledge of plane surveying for the computation of bearings in a traverse.
		CO2	"
		CO3	"
		CO4	Calculate the height of the building by using a theodolite and tacheometric survey, and total station surveying
		CO5	Apply the field techniques using various instruments
		CO6	"
24CE2102L	FMH	CO1	Applying properties of fluid and conservation laws to real-world problems.
		CO2	Applying properties of fluid and conservation laws fluid flowing through pipe.
		CO3	Analysis fluid properties in open channel flow.
		CO4	Analysis of specific energy curve in open cannel flow
		CO5	Illustrate the experimental procedure and interpretation of results by applying properties of fluid through flow through pipes and open channel flow.
24MT2019L	P & S	CO1	Apply inclusive and exclusive frequency distributions techniques, graphical representation of data, measures of central tendency and measures of dispersion to interpret the data
		CO2	Apply correlation and regression concepts to solve real world problems

		CO3	Apply probability theory, theorems, and standard discrete and continuous distributions (binomial, Poisson, normal) to solve real world problems.
		CO4	Perform hypothesis testing by applying large and small sample tests, t-tests, Chi-square tests, and ANOVA for statistical inference.
24SDCE01L	VMSD	CO1	Understand the fundamentals of architectural planning, including Vastu principles and spatial arrangement
		CO2	Demonstrate detailed 2D architectural drawings of residential buildings, including walls, staircases, and floors
		CO3	Demonstrate the placement of components such as doors, windows, furniture, and sanitary fittings in a layout
		CO4	Generate front elevation views and apply dimensioning techniques in architectural drawings using AutoCAD.
		CO5	Prepare and finalize construction-ready sheets for printing and presentation using CAD tools
24CE2104L	BMPD	CO1	Understand different types of buildings, building components along with materials used for the construction of buildings
		CO2	Understand building bye-laws for planning and construction of buildings
		CO3	Understand different types of equipment used in construction projects and management of construction projects
		CO4	Apply the techniques required for construction project management.
		CO5	Apply the principles and guidelines proposed by building regulatory bodies to develop the plan of a building
23EC1203	BEEC	CO1	"Understand the basic concepts of circuits and its fundamentals
		CO2	Grasp the principles of AC circuits,including sinusoidal wave forms, impedance, and power factor.
		CO3	"Comprehend the behavior of basic electronic components, such as diodes, transistors.
		CO4	"Understand the basic functional Principles of analog and digital ICs.
24CE2206	SA	CO1	Determine the deflection of Determinate beams by various methods.
		CO2	Analysis of Indeterminate Propped cantilever and fixed beams.
		CO3	Analyze the Indeterminate continuous beams and portal frames by slope deflection

			method.
		CO4	Analyze the continuous beams and portal frames by moment distribution method and Kanis method.
24CE2207	CT	CO1	Understand about the constituent and properties of cement
		CO2	Understand about the fresh, hardened and durability of concrete
		CO3	Understand about special concretes and concreting techniques
		CO4	To apply concrete mix design in the field
		CO5	Demonstrate and apply knowledge experiments in the laboratory
24CE2208	GTE	CO1	Apply and Describe soils and determine their physical characteristics such as grain size, water content, and void ratio, and their inter-relations, classify soils, determine compaction of soils, and analyze the soil permeability and seepage analysis
		CO2	Apply the soils on effective stress concepts to determine total/effective stresses, pore-water pressures, consolidation settlement and time, and evaluate soil stress–strain behavior and strength parameters under drained and undrained conditions.
		CO3	Apply Terzaghi's shear failure criteria to determine the ultimate bearing capacity and settlement of structures founded on soils using shallow foundations, considering relevant assumptions and limitations.
		CO4	Apply Terzaghi's shear failure concepts to evaluate the load-carrying capacity and settlement behavior of structures supported by deep foundations such as pile foundations.
		CO5	Apply laboratory tests to determine soil index properties, compaction characteristics, permeability, consolidation behavior, and shear strength parameters, and interpret the results to evaluate the geotechnical properties of soils.
		CO6	Apply geotechnical principles to analyse soil behavior, estimate stresses, settlement, seepage, and bearing capacity, and design safe shallow and deep foundations using IS codes and field test data.
24CE2212	EE	CO1	To apply the concept of forecast population and design of water treatment units
		CO2	To Understand outline of Water distribution system and layoutsof water layouts distribution system and air pollution.

		CO3	Apply concept of sewage quantity and design of sewerage system
		CO4	To Understand the concept of Solid Waste Management methods and Noise pollution effects
		CO5	To apply the testing of water & wastewater, design of water,wastewater treatment plant.
24CE2233F	RACE	CO1	Describe the principles and working mechanisms of robotic systems used in bricklaying, focusing on precision, accuracy, and productivity enhancement
		CO2	Classify the key features of autonomous excavation and grading systems that utilize sensors and GPS technology for efficient earthmoving operations
		CO3	Illustrate the integration of 3D printing technology in construction for producing customized and complex structural components
		CO4	Outline robotic welding and automated assembly techniques to improve the quality, consistency, and efficiency of construction processes
24CC3008	AUTOCAD	CO1	Apply AutoCAD 2020 drafting tools, coordinate systems, units, templates, and snap functions to create accurate 2D drawings.
		CO2	Develop architectural floor plans, elevations, and dimensions by applying building standards and Vastu planning principles.
		CO3	Prepare structural detailing drawings such as column layouts, footing layouts, beam layouts, slab layouts, and reinforcement sheets using appropriate drafting techniques.
		CO4	Implement sheet setup, title blocks, plotting settings, and apply drafting methods to generate electrical and sanitary layout drawings ready for printing.
23OEGN02	NCC2	CO1	Define thinking, reasoning, critical thinking and creative thinking
		CO2	To think critically about different life related issues.
		CO3	Think divergently and will try to break functional fixedness.
		CO4	"
		CO5	"
OEIN0001	F IOT	CO1	Understand functional blocks of IoT devices
		CO2	Demonstrate the Technologies involved in IoT based Systems
		CO3	Apply different wireless technologies used

			for the development of IoT based Networks
		CO4	Analyze various IOT Real time application design Components
CRTCODL2V2	CRTCOD	CO5	Evaluating problem-solving skills using both the languages and data structures in an integrated manner, ensuring that students can apply their knowledge to practical, algorithmic challenges.
24UC1203	DTI	CO1	"Understand the importance of Design thinking mindset for identifying contextualized problems
		CO2	"Analyze the problem statement by empathizing with user
		CO3	"Develop ideation and test the prototypes made
		CO4	"Explore the fundamentals of entrepreneurship skills for transforming the challenge into an opportunity
23ME1001	EM	CO1	Apply the concept of forces, governing static equations, and analyze the planar system of forces.
		CO2	Use analytical techniques for analyzing forces in statically determinate structures.
		CO3	Apply the concepts of planar and non-planar system of parallel forces and estimate the moment of inertia for lamina and material bodies.
		CO4	Apply fundamental concepts of kinematics and kinetics of particles to solve simple practical problems.
23OEGN01	NCC1	CO1	NCC
		CO2	NCC GENERAL: Introduction of NCC, History, Aims, Objective of NCC & NCC as Organization,Incentives of NCC, Duties of NCC Cadet. NCC Camps: Types & Conduct. NATIONAL INTEGRATION ANDAWARENESS: National Integration: Importance & Necessity, Factors Affecting National Integration, Unity inDiversity & Role of NCC in Nation Building, Threats to National Security. PERSONALITYDEVELOPMENT: Intra & Interpersonal skills - Self-Awareness-&Analysis, Empathy, Critical & creativethinking, Decision making and p
		CO3	NCC GENERAL: Introduction of NCC, History, Aims, Objective of NCC & NCC as Organization,Incentives of NCC, Duties of NCC Cadet. NCC Camps: Types & Conduct. NATIONAL INTEGRATION ANDAWARENESS: National Integration: Importance & Necessity, Factors Affecting National

			Integration, Unity inDiversity & Role of NCC in Nation Building, Threats to National Security. PERSONALITYDEVELOPMENT: Intra & Interpersonal skills - Self-Awareness- &Analysis, Empathy, Critical & creativethinking, Decision making and p
		CO4	NCC GENERAL: Introduction of NCC, History, Aims, Objective of NCC & NCC as Organization,Incentives of NCC, Duties of NCC Cadet. NCC Camps: Types & Conduct. NATIONAL INTEGRATION ANDAWARENESS: National Integration: Importance & Necessity, Factors Affecting National Integration, Unity inDiversity & Role of NCC in Nation Building, Threats to National Security. PERSONALITYDEVELOPMENT: Intra & Interpersonal skills - Self-Awareness- &Analysis, Empathy, Critical & creativethinking, Decision making and p
		CO5	NCC GENERAL: Introduction of NCC, History, Aims, Objective of NCC & NCC as Organization,Incentives of NCC, Duties of NCC Cadet. NCC Camps: Types & Conduct. NATIONAL INTEGRATION ANDAWARENESS: National Integration: Importance & Necessity, Factors Affecting National Integration, Unity inDiversity & Role of NCC in Nation Building, Threats to National Security. PERSONALITYDEVELOPMENT: Intra & Interpersonal skills - Self-Awareness- &Analysis, Empathy, Critical & creativethinking, Decision making and p
24SP2101	ATHLETICS	CO1	Baseline fitness test + Intro to Athletics
24SP2103	BADMINTON	CO1	"Unit 1: Fundamentals & Warm-Up This unit focuses on preparing the body and introducing basic techniques. It includes a basic warm-up and stretching routine, grip practice, and stance and footwork drills. Shadow badminton footwork and net recovery drills help build early movement coordination and court awareness."
24SP2104	CRICKET	CO1	" Introduction & Physical Preparation This unit begins with a lecture and equipment demonstration to familiarize players with cricket gear and safety. It includes warm-up routines like stretching, jogging, and agility ladder drills to build fitness and coordination."
24SP2105	CHESS	CO1	Opening Principles & Development
			This unit focuses on strong opening foundations. Students practice common

			openings through mini-games, with special emphasis on 1.e4 and 1.d4. Activities like the castling race and castling legality drills reinforce early game rules and quick king safety."
24SP2108	KABADDI	CO1	"Introduction & Basic Fitness
24SP2109	KHO-KHO	CO1	"Unit 1:Introduction & Movement Basics This unit begins with a lecture, instructional videos, group discussions, and a simple quiz to introduce kabaddi rules and history. Physical readiness is developed through jogging, dynamic stretching, shuttle runs, and basic fitness drills."
24SP2110	TENNIS	CO1	"Unit 1: Fundamentals & Forehand Introduce basic tennis rules, grips, stance, and footwork. Focus on developing a strong forehand through drills and repetition."
24SP2111	TABLE TENNIS	CO1	"Introduction & Safety Begin with warm-up exercises, an introduction to equipment, basic rules, and safety demonstrations to ensure a safe and informed start."
24SP2113	THROWBALL	CO1	"Introduction & Court Familiarization Start with a court tour, rules explanation, and demonstration games to help players understand the playing environment and basics."