COURSE OUTCOMES - 2021 SCHEME

3rd SEMESTER

Subject:	Transform calculus, fourier series, and numerical techniques		
Subject Code:	21MAT31	**NBA Code:**	CV201
CO1	To solve ordinary differential equations using Laplace transform.		
CO2	Demonstrate the Fourier series to study the behaviour of periodic functions and their applications in system communications, digital signal processing and field theory.		
CO3	To use Fourier transforms to analyze problems involving continuous-time signals and to apply Z-Transform techniques to solve difference equations		
CO4	To solve mathematical models represented by initial or boundary value problems involving partial differential equations		
CO5	Determine the extremals of functional using calculus of variations and solve problems arising in dynamics of rigid bodies and vibrational analysis.		

Subject:	Geodetic engineering		
Subject Code:	21CV32	**NBA Code:**	CV202
CO1	Execute survey using compass and plane table		
CO2	Find the level of ground surface and Calculation of area and volumes		
CO3	Operate theodolite for field execution		
CO4	Estimate the capacity of reservoir		
CO5	Interpret satellite imageries		

Subject:	Strength of materials		
Subject Code:	21CV33	**NBA Code:**	CV203
CO1	Evaluate the behaviour when a solid material is subjected to various types of forces (namely Compressive, Tensile, Thermal, Shear, flexure, Torque, internal fluid pressure) and estimate stresses and corresponding strain developed.		
CO2	Estimate the forces developed and draw schematic diagram for stresses, forces, moments for simple beams with different types of support and are subjected to various types of loads.		
CO3	Evaluate the behaviour when a solid material is subjected to Torque and internal fluid pressure and estimate stresses and corresponding strain developed.		
CO4	Distinguish the behaviour of short and long column and calculate load at failure & explain the behaviour of spring to estimate deflection and stiffness		
CO5	Examine and Evaluate the mechanical properties of various materials under different loading conditions		

Subject:	Earth resource and engineering		
Subject Code:	21CV34	**NBA Code:**	CV204
CO1	To understand the importance of earth's dynamic interior in civil engineering and geo hazard mitigation and management		
CO2	To analyse the physical characteristics of the rocks and minerals for its suitable application in engineering		
CO3	To evaluate earth process for providing sustainable management and development through geoengineering		
CO4	Subsurface exploration for providing safe and suitable site condition and earth resources for reengineering activities		
CO5	To application of modern tools and techniques in earth resources management		

Subject:	Computer aided engineering drawing		
Subject Code:	21CVL35	**NBA Code:**	CV205
CO1	Prepare, read and interpret the drawings in a professional set up.		
CO2	Know the procedures of submission of drawings		
CO3	Develop working and submission drawings for building.		
CO4	Plan and design of residential building as per the given requirements.		
CO5	Plan and design of public building as per the given requirements.		

Subject:	Social connect and responsibilities		
Subject Code:	21SCR36	**NBA Code:**	CV206
CO1	Understand social responsibility		
CO2	Practice sustainability in future projects		
CO3	Knowledge in creativity skills		
CO4	Showcase planning and organizational skills		
CO5	Communication between student and society		

Subject:	Samskrutha kannada		
Subject Code:	21KSK37	**NBA Code:**	CV207
CO1	ಕನ್ನಡ ಭಾಷೆ ಸಾಹಿತ್ಯ ಮತ್ತೆ ಕನ್ನಡದ ಸಂಸ್ಕೃತಿಯ ಪರಿಚಯವಾಗುತ್ತದೆ		
CO2	ಕನ್ನಡ ಸಾಹಿತ್ಯದ ಆಧುನಿಕ ಪೂರ್ವ ಮತ್ತೆ ಆಧುನಿಕ ಕಾವ್ಯಗಳು ಮತ್ತು ಸಂಸ್ಕೃತಿಯ ಬಗ್ಗೆ ಆಸಕ್ತಿಯು ಮೂಡುತ್ತದೆ		
CO3	ತಾಂತ್ರಿಕ ವ್ಯಕ್ತಿಗಳ ಪರಿಚಯವಾಗುತ್ತದೆ		
CO4	ಕನ್ನಡ ಭಾಷಾಭ್ಯಾಸ ಸಾಮಾನ್ಯ ಕನ್ನಡ ಹಾಗೂ ಆದಲಿತ ಕನ್ನಡದ ಪದಗಳ ಪರಿಚಯವಾಗುತ್ತದೆ		

Subject:	Balake kannada		
Subject Code:	21KBK37	**NBA Code:**	CV208
CO1	To understand the necessity of learning of local language for comfortable life.		
CO2	To Listen and understand the Kannada language properly.		
CO3	To speak, read and write Kannada language as per requirement.		
CO4	To communicate (converse) in Kannada language in their daily life with kannada speakers.		
CO5	To speak in polite conservation.		

Subject:	Microsoft excel & VBA		
Subject Code:	21CV382	**NBA Code:**	CV209
CO1	Solve Trigonometric, Logarithmic, Exponential, Statistical problems and perform Matrix operations		
CO2	Solve civil engineering problems using VB as a tool		
CO3	Design structural elements by integrating excel and VB		

COURSE OUTCOMES - 2021 SCHEME

4th SEMESTER

Subject:	Complex analysis, probability and statistical methods		
Subject Code:	21MAT41	**NBA Code:**	CV210
CO1	Use the concepts of an analytic function and complex potentials to solve the problems arising in electromagnetic field theory. Utilize conformal transformation and complex integral arising in aerofoil theory, fluid flow visualization and image processing.		
CO2	Obtain series solutions of ordinary differential equation.		
CO3	Make use of the correlation and regression analysis to fit a suitable mathematical model for the statistical data		
CO4	Apply discrete and continuous probability distributions in analysing the probability models arising in the engineering field.		
CO5	Construct joint probability distributions and demonstrate the validity of testing the hypothesis.		

Subject:	Fluid mechanics and hydraulics		
Subject Code:	21CV42	**NBA Code:**	CV211
CO1	Understand fundamental properties of fluids and solve problems on Hydrostatics		
CO2	Apply Principles of Mathematics to represent Kinematics and Bernoulli's principles		
CO3	Compute discharge through pipes, notches and weirs		
CO4	Design of open channels of various cross sections		
CO5	Design of turbines for the given data and understand their operation characteristics		

Subject:	Public health engineering		
Subject Code:	21CV43	**NBA Code:**	CV212
CO1	Estimate average and peak water demand for a community.		
CO2	Evaluate water quality and environmental significance of various parameters and plan suitable treatment system.		
CO3	Design the different units of water treatment plant		
CO4	Understand and design the various units of wastewater treatment plant		
CO5	Acquire capability to conduct experiments and estimate the concentration of different parameters and compare the obtained results with the concerned guidelines and regulations.		

Subject:	Analysis of structures		
Subject Code:	21CV44	**NBA Code:**	CV213
CO1	Evaluate slope and deflections in beams using geometrical methods.		
CO2	Determine deflections in trusses and frames using energy principles.		
CO3	Analyse arches and cables for stress resultants.		
CO4	Apply slope defection method in analysing indeterminate structures and construct bending moment diagram.		
CO5	Analyse continuous beams, frames and trusses using stiffness matrix method of analysis.		

Subject:	Biology for engineers		
Subject Code:	21BE45	**NBA Code:**	CV214
CO1	Elucidate the basic biological concepts via relevant industrial applications and case studies.		
CO2	Evaluate the principles of design and development, for exploring novel bioengineering projects.		
CO3	Corroborate the concepts of biomimetics for specific requirements.		
CO4	Think critically towards exploring innovative biobased solutions for socially relevant problems.		

Subject:	Earth resources & engineering laboratory		
Subject Code:	21CVL46	**NBA Code:**	CV215
CO1	Comprehend the relations between minerals and rocks based on their physical properties		
CO2	Assess the suitability of materials used in building construction		
CO3	Differentiate geological investigations necessary for the construction of dams, bridges, and tunnels		
CO4	Describe the groundwater investigation using resistivity methods		
CO5	Understand the applications of Geospatial technology in Civil Engineering.		

Subject:	Constitution India & professional ethics		
Subject Code:	21CIP47	**NBA Code:**	CV216
CO1	Have constitutional knowledge and legal literacy.		
CO2	Understand Engineering and Professional ethics and responsibilities of Engineers.		

Subject:	GIS with quantum GIS		
Subject Code:	21CV482	**NBA Code:**	CV217
CO1	Use open source software for civil engineering applications		
CO2	Various tools in QGIS software		
CO3	Create thematic layers with attribute data		
CO4	Generate maps for decision making		

Subject:	Universal human values		
Subject Code:	21UH49	**NBA Code:**	CV218
CO1	Holistic vision of life and Socially responsible behaviour		
CO2	Environmentally responsible work		
CO3	Ethical human conduct		
CO4	Having Competence and Capabilities for Maintaining Health and Hygiene		
CO5	Appreciation and aspiration for excellence (merit) and gratitude for all		

COURSE OUTCOMES - 2021 SCHEME

5th SEMESTER

Subject:	Hydrology and water resources engineering		
Subject Code:	21CV51	**NBA Code:**	CV301
CO1	Provide a background in the theory of hydrological processes and their measurement		
CO2	Estimate runoff and develop unit hydrographs		
CO3	Find the water requirement and frequency of irrigation for various crops.		
CO4	Find the canal capacity and compute the reservoir capacity		
CO5	Analyze floods and droughts. Emphasize on the importance of conservation of water and		

Subject:	Transportation engineering		
Subject Code:	21CV52	**NBA Code:**	CV302
CO1	Acquire the capability of proposing a new alignment or re-alignment of existing roads, conduct necessary field investigation for generation of required data.		
CO2	Evaluate the engineering properties of the materials and suggest the suitability of the same for pavement construction.		
CO3	Design road geometrics, structural components of pavement and drainage.		
CO4	Evaluate the highway economics by few select methods and also will have a basic knowledge of various highway financing concepts.		

Subject:	Design of RC structural elements		
Subject Code:	21CV53	**NBA Code:**	CV303
CO1	Understand the design philosophy and principles.		
CO2	Solve engineering problems of RC elements subjected to flexure, shear and torsion.		
CO3	Demonstrate the procedural knowledge in designs of RC structural elements such as slabs, columns and footings.		
CO4	Owns professional and ethical responsibility.		

Subject:	Geotechnical engineering		
Subject Code:	21CV54	**NBA Code:**	CV304
CO1	Understand the basic concepts of soil mechanics and use the knowledge to determine density, and other parameters.		
CO2	Analyze the flow of water through soil medium and estimate the Pore pressure, Effective Pressure of soils in different conditions		
CO3	Identify the compaction characteristics of soil and consolidation characteristics		
CO4	Estimate the Shear Strength characteristics of soil mass		
CO5	Evaluate the Bearing capacity and Settlement in soils		

Subject:	Geotechnical engineering lab		
Subject Code:	21CVL55	**NBA Code:**	CV305
CO1	Physically identify sand, gravel, silt and clay type soils		
CO2	Conduct tests and interpret results of specific gravity, water content, grain size analysis and density		
CO3	Perform tests to determine consistency limits, compaction test		
CO4	Carry out tests to determine shear strength of soils, unconfined compression tests, triaxial tests		
CO5	Study the permeability Characteristics of soil		

Subject:	Research methodology & intellectual property rights		
Subject Code:	21RMI56	**NBA Code:**	CV306
CO1	To know the meaning of engineering research.		
CO2	To know the procedure of literature review and technical reading		
CO3	To know the fundamentals of patent laws and drafting procedure		
CO4	Understanding the copyright laws and subject matters of copyrights and designs		
CO5	Understanding the copyright laws and subject matters of copyrights and designs		

Subject:	Environmental studies		
Subject Code:	21CIV57	**NBA Code:**	CV307
CO1	Understand the principles of ecology and environmental issues that apply to air, land, and water issues on a global scale		
CO2	Develop critical thinking and/or observation skills, and apply them to the analysis of a problem or question related to the environment.		
CO3	Demonstrate ecology knowledge of a complex relationship between biotic and a biotic component.		
CO4	Apply their ecological knowledge to illustrate and graph a problem and describe the realities that managers face when dealing with complex issues.		

Subject:	Data analysis with python		
Subject Code:	21CV581	**NBA Code:**	CV308
CO1	Use online data sources for solving problems.		
CO2	Solve statistical problems and interpretation of results.		
CO3	Data visualization and graphical representation for decision making.		
CO4	Solve problems using artificial neural networks.		
CO5	Use online data sources for solving problems.		

COURSE OUTCOMES - 2021 SCHEME

6th SEMESTER

Subject:	Construction management and entrepreneurship		
Subject Code:	21CV61	**NBA Code:**	CV309
CO1	Understand various management principles of construction industry.		
CO2	Use planning, organizing, scheduling, monitoring and controlling techniques for managing construction activity.		
CO3	Understand importance of quality control and safety in construction.		
CO4	Understand managing data pertaining to construction project.		
CO5	Evaluate alternatives and develop capital budget for different scenarios.		

Subject:	Concrete technology		
Subject Code:	21CV62	**NBA Code:**	CV310
CO1	Assess and infer various properties of cement, cementitious materials, Fine and coarse aggregate as per codal provision and specifications		
CO2	Design the concrete mix for the given materials as per IS:10262-2019 provisions		
CO3	Understand the manufacturing process and asses the quality of concrete		
CO4	Describe the properties of fresh and hardened concrete – Strength and Durability aspects		
CO5	Examine and Evaluate properties of Cement and Concrete		

Subject:	Design of steel structures		
Subject Code:	21CV63	**NBA Code:**	CV311
CO1	Possess knowledge of Steel Structures Advantages and Disadvantages of Steel structures, steel code provisions and plastic behaviour of structural steel.		
CO2	Understand the Concept of Bolted and Welded connections.		
CO3	Understand the Concept of Design of compression members, built-up columns and columns splices		
CO4	Understand the Concept of Design of tension members, simple slab base and gusseted base.		
CO5	Understand the Concept of Design of laterally supported and un-supported steel beams.		

Subject:	Applied geotechnical engineering		
Subject Code:	21CV642	**NBA Code:**	CV312
CO1	Understand the basic concepts of soil mechanics and use the knowledge to determine density, and other parameters.		
CO2	Dewatering and ground water table determination and Analyze the flow of water through soil medium		
CO3	Estimate the earth pressure in soils due to lateral loads		
CO4	Analyse the stability of slopes		
CO5	Evaluation of stress distribution in the soil due to applied load at surface		

Subject:	Renewable energy power plants		
Subject Code:	21CV652	**NBA Code:**	CV313
CO1	To introduce the concept & principles of Solar energy, it's radiation, measurement, & application		
CO2	To introduce the concept & principles of Solar energy, it's radiation, Geometry, thermal system, collection, storage & application		
CO3	To Understand the application aspects of Wind & Biomass Energy		
CO4	To Understand the application aspects of Hydroelectric, Tidal Power, & Ocean wave Energy		
CO5	To Understand the application aspects of Ocean Thermal energy conversion, & Geothermal energy		

Subject:	Computer aided detailing of structures		
Subject Code:	21CVL66	**NBA Code:**	CV314
CO1	Prepare the detailed working drawings of RC Structural Elements		
CO2	Prepare the detailed working drawings of bolted Steel Structural Elements		
CO3	Prepare the detailed working drawings of welded Steel Structural Elements		

Subject:	Mini project		
Subject Code:	21CVMP67	**NBA Code:**	CV315
CO1	Practical Skills: Apply civil engineering concepts to real-world scenarios.		
CO2	Technical Proficiency: Develop hands-on experience with civil engineering tools.		
CO3	Research Insight: Conduct thorough research and analysis on civil engineering topics.		
CO4	Collaboration: Enhance teamwork and communication through group projects.		
CO5	Practical Skills: Apply civil engineering concepts to real-world scenarios.		

Subject:	Societal internship		
Subject Code:	21INT68	**NBA Code:**	CV316
CO1	Develop knowledge in the field of Civil Engineering and other disciplines through independent learning and collaborative study.		
CO2	Identify and discuss the current, real-time issues and challenges in engineering & technology.		
CO3	Develop written and oral communication skills.		
CO4	Explore concepts in larger diverse social and academic contexts.		
CO5	Apply principles of ethics and respect in interaction with others. Develop the skills to enable life-long learning.		