COURSE OUTCOMES - 2018 SCHEME

3rd SEMESTER

Subject:	Transform calculus, fourier series, and numerical techniques		
Subject Code:	18MAT31	**NBA Code:**	CV201
CO1	To solve ordinary differential equations using Laplace transform.		
CO2	Demonstrate Fourier series to study the behavior of periodic functions and their applications in system communications, digital signal processing and field theory.		
CO3	To use Fourier transform 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 difference equations		
CO5	Determine the externals of functional using calculus of variations and solve problems arising in dynamics of rigid bodies and vibrational analysis.		

Subject:	Strength of materials		
Subject Code:	18CV32	**NBA Code:**	CV202
CO1	To evaluate the basic concepts of the stresses and strains for different materials and strength of structural elements.		
CO2	To evaluate the development of internal forces and resistance mechanism for one dimensional and two dimensional structural elements.		
CO3	To analyse different internal forces and stresses induced due to representative loads on structural elements.		
CO4	To evaluate slope and deflections of beams.		
CO5	To evaluate the behaviour of torsion members, columns and struts.		

Subject:	Fluid mechanics		
Subject Code:	18CV33	**NBA Code:**	CV203
CO1	The fundamental properties of fluids and its application		
CO2	Hydrostatic laws and application to solve practical problem		
CO3	Principles of kinematics and hydrodynamics for practical applications		
CO4	Basic design of pipes and pipe networks considering flow, pressure and its bases		
CO5	The basic flow rate measurements.		

Subject:	Building materials and construction		
Subject Code:	18CV34	**NBA Code:**	CV204
CO1	Select suitable materials for buildings and adopt suitable construction techniques.		
CO2	Decide suitable type of foundation based on soil parameters		
CO3	Supervise the construction of different building elements based on suitability		
CO4	Exhibit the knowledge of building finishes and form work requirements		
CO5	Knowledge of structural components like lintels, arches, staircase and roofs		

Subject:	Basic surveying		
Subject Code:	18CV35	**NBA Code:**	CV205
CO1	Possess a sound knowledge of fundamental principles Geodetics		
CO2	Measurement of vertical and horizontal plane, linear and angular dimensions to arrive at solutions to basic surveying problems.		
CO3	Capture geodetic data to process and perform analysis for survey problems		
CO4	Analyse the obtained spatial data and compute areas and volumes. Represent 3D data on plane figures as contours		
CO5	Possess a sound knowledge of fundamental principles geodetics		

Subject:	Engineering geology		
Subject Code:	18CV36	**NBA Code:**	CV206
CO1	Apply geological knowledge in different civil engineering practice.		
CO2	Students will acquire knowledge on durability and competence of foundation rocks, and confidence enough to use the best building materials.		
CO3	Civil Engineers are competent enough for the safety, stability, economy and life of the structures that they construct.		
CO4	Able to solve various issues related to ground water exploration, build up dams, bridges, tunnels which are often confronted with ground water problems.		
CO5	Intelligent enough to apply GIS, GPS and remote sensing as a latest tool in different civil engineering construction.		

Subject:	Computer aided building planning & drawing		
Subject Code:	18CVL37	**NBA Code:**	CV207
CO1	Prepare, read and interpret the drawings in a professional set up.		
CO2	Know the procedures of submission of drawings and		
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:	Building materials testing laboratory		
Subject Code:	18CVL38	**NBA Code:**	CV208
CO1	Ability to apply knowledge of mathematics and engineering in calculating the mechanical properties of structural materials		
CO2	Ability to function on multi-disciplinary teams in the area of materials testing		
CO3	Ability to use the techniques, skills and modern engineering tools necessary for engineering		
CO4	Understanding of professional and ethical responsibility in the areas of material testing		
CO5	Ability to communicate effectively the mechanical properties of materials		

Subject:	Vyavaharika Kannada (Kannada for communication)		
Subject Code:	18KVK39	**NBA Code:**	CV209
CO1	Understand Kannada language		
CO2	Communicate in Kannada language		
CO3	Read simple Kannada words		
CO4	Pronounce Kannada words correctly		

Subject:	Aadalitha kannada (kannada for administration)		
Subject Code:	18KAK39	**NBA Code:**	CV209
CO1	ಪದವಿ ವಿದ್ಯಾರ್ಥಿಗಳಿಗಿರುವುದು ಸಾಂಸ್ಕೃತಿಕ ಕನ್ನಡ ಜೊತೆಗೇ ಕ್ರಯಾತ್ಮಕ ಕನ್ನಡವನ್ನು, ಕನ್ನಡ ಸಾಯಿತ್ರ ಮಾತು ನಾಡು ನುಡಿಯ ಪರಿಚಯ ಮಾಡಿ ಕೊಡುವುದು		
CO2	ವಿದ್ಯಾರ್ಥಿಗಳಲ್ಲಿ ಕನ್ನಡ ಭಾಷೆಯ ವ್ಯಾಕರಣದ ಬಗೆ ಅರಿವು ಮಾಡಿ ಕೊಡುವುದು ಮತ್ತು ಕನ್ನಡ ಭಾಷೆಯ ರಚನೆಯಲ್ಲಿನ ನಿಯಮಗಳನ್ನು ಪರಿಚಯಿಸುವುದು		
CO3	ಕನ್ನಡ ಭಾಷೆಯಲ್ಲಿ ಕಂಡು ಬರುವ ದೋಷಗಳು ಹಾಗೆ ಅವುಗಳ ನಿವ್ಯಾರನೆ		
CO4	ಸಾಯಮಯನ ಅರ್ಜಿಗಳು, ಸ್ಕಿಯರ ಮಾತು ಅದರ ಸ್ಕಿಯರ ಪತ್ರ ವ್ಯವಹಾರದ ಬಗ್ಗೆ ಅರಿವು ಮಾಡಿಸಿಕೊಡುವುದು		
CO5	ಭಾಷೆಯಂತ್ರ ಮಾತು ಪ್ರಬಂಧ ರಚನೆಗೆ ಕಲಿಸುವುದು, ಕನ್ನಡ ಭಾಷೆ ಅಭಯಕ್ಕೆ ಸಾಯಮಾಯನ ಕನ್ನಡ ಹೇಗೂ ಆದಲಿತ ಕನ್ನಡದ ಪದಗಳ ಪರಿಚಯ ಮಾಡಿಕೊಡುವುದು		

COURSE OUTCOMES - 2018 SCHEME

4th SEMESTER

Subject:	Complex analysis, probability and statistical methods		
Subject Code:	18MAT41	**NBA Code:**	CV210
CO1	Use the concepts of analytic function and complex potentials to solve the problems arising in electromagnetic field theory.		
CO2	Utilize conformal transformation and complex integral arising in aerofoil theory, fluid flow visualization and image processing.		
CO3	Apply discrete and continuous probability distributions in analyzing the probability models arising in engineering field.		
CO4	Make use of the correlation and regression analysis to fit a suitable mathematical model for the statistical data.		
CO5	Construct joint probability distributions and demonstrate the validity of testing the hypothesis		

Subject:	Analysis of determinate structures		
Subject Code:	18CV42	**NBA Code:**	CV211
CO1	Identify different forms of structural systems.		
CO2	Construct ILD and analyse the beams and trusses subjected to moving loads		
CO3	Understand the energy principles and energy theorems and its applications		
CO4	To determine the deflections of trusses and beams.		
CO5	Determine the stress resultants in arches and cables.		

Subject:	Applied hydraulics		
Subject Code:	18CV43	**NBA Code:**	CV212
CO1	Principles of dimensional analysis to design hydraulic models and design of various models		
CO2	Design the open channels of various cross sections including design of economical channel sections		
CO3	Energy concepts to fluid in open channel sections, energy dissipation, water surface profiles at different conditions.		
CO4	Basic design of pipes and pipe networks considering flow, pressure and its losses.		
CO5	The working principles of the hydraulic machines for the given data and analyzing the performance of turbines for various design data.		

Subject:	Concrete technology		
Subject Code:	18CV44	**NBA Code:**	CV213
CO1	Relate material characteristics and their influence on microstructure of concrete.		
CO2	Distinguish concrete behavior based on its fresh and hardened properties.		
CO3	Illustrate proportioning of different types of concrete mixes for required fresh and hardened properties using professional codes.		
CO4	Adopt suitable concreting methods to place the concrete based on requirement.		
CO5	Select a suitable type of concrete based on specific application.		

Subject:	Advanced surveying		
Subject Code:	18CV45	**NBA Code:**	CV214
CO1	Apply the knowledge of geometric principles to arrive at surveying problems		
CO2	Use modern instruments to obtain geo-spatial data and analyse the same to appropriate engineering problems.		
CO3	Capture geodetic data to process and perform analysis for survey problems with the use of electronic instruments.		
CO4	Design and implement the different types of curves for deviating type of alignments.		
CO5	Apply the knowledge of geometric principles to arrive at surveying problems		

Subject:	Water supply & treatment engineering		
Subject Code:	18CV46	**NBA Code:**	CV215
CO1	Estimate average and peak water demand for a community.		
CO2	Evaluate available sources of water, quantitatively and qualitatively and make appropriate choice for a community.		
CO3	Evaluate water quality and environmental significance of various parameters and plan suitable treatment system.		
CO4	Basic design of pipes and pipe networks considering flow, pressure and its losses		
CO5	Design a comprehensive water treatment and distribution system to purify and distribute water to the required quality standards.		

Subject:	Engineering geology laboratory		
Subject Code:	18CVL47	**NBA Code:**	CV216
CO1	To expose the students to identify the minerals and rocks based on their inherent properties and uses in civil engineering		
CO2	To educate the students in the interpretation of the geological maps related to civil engineering projects		
CO3	Students will learn the dip and strike, thickness of strata, bore hole problems related to geological formation related to foundation, tunnels, reservoirs and mining		
CO4	Students will understand the field knowledge by visiting the site like problems faults, folds, joints, unconformity etc		

Subject:	Fluid mechanics and hydraulics machines laboratory		
Subject Code:	18CVL48	**NBA Code:**	CV217
CO1	Properties of fluids and the use of various instruments for fluid flow measurement.		
CO2	Working of hydraulic machines under various conditions of working and their characteristics		
CO3	Calibrate flow measuring devices		
CO4	Measure discharge and head losses in pipes		
CO5	Understand the fluid flow pattern		

Subject:	Constitution of India, professional ethics and cyber law		
Subject Code:	18CPC49	**NBA Code:**	CV218
CO1	Have constitutional knowledge and legal literacy		
CO2	Understand engineering and professional ethics and responsibilities of engineers		
CO3	Understand the cybercrimes and cyber laws for cyber safety measures		

COURSE OUTCOMES - 2018 SCHEME

5th SEMESTER

Subject:	Construction management and entrepreneurship		
Subject Code:	18CV51	**NBA Code:**	CV301
CO1	Prepare a project plan based on requirements and prepare schedule of a project by understanding the activities and their sequence.		
CO2	Understand labour output, equipment efficiency to allocate resources required for an activity / project to achieve desired quality and safety		
CO3	Analyze the economics of alternatives and evaluate benefits and profits of a construction activity based on monetary value and time value.		
CO4	Establish as an ethical entrepreneur and establish an enterprise utilizing the provisions offered by the federal agencies.		
CO5	Establish as an ethical entrepreneur and establish an enterprise utilizing the provisions offered by the federal agencies.		

Subject:	Analysis of indeterminate structures		
Subject Code:	18CV52	**NBA Code:**	CV302
CO1	Determine the moment in indeterminate beams and frames having variable moment of inertia and subsidence using slope defection method		
CO2	Determine the moment in indeterminate beams and frames of no sway and sway using moment distribution method.		
CO3	Construct the bending moment diagram for beams and frames by Kani's method.		
CO4	Construct the bending moment diagram for beams and frames using flexibility method		
CO5	Analyze the beams and indeterminate frames by system stiffness method		

Subject:	Design of RC Structural elements		
Subject Code:	18CV53	**NBA Code:**	CV303
CO1	Identify, formulate and solve engineering problems of RC elements subjected to different kinds of loading.		
CO2	Follow a procedural knowledge in designing various structural RC elements.		
CO3	Impart the usage of codes for strength, serviceability and durability.		
CO4	Provide knowledge in analysis and design of RC elements.		

Subject:	Basic Geotechnical Engineering		
Subject Code:	18CV54	**NBA Code:**	CV304
CO1	To plan and execute geotechnical site investigation program for different civil engineering projects		
CO2	To understand stress distribution and resulting settlement beneath the loaded footings on sand and clayey soils		
CO3	To estimate factor of safety against failure of slopes and to compute lateral pressure distribution behind earth retaining structures		
CO4	To determine bearing capacity of soil and achieve proficiency in proportioning shallow isolated and combined footings for uniform bearing pressure		
CO5	To estimate load carrying capacity of single and group of piles		

Subject:	Municipal wastewater engineering		
Subject Code:	18CV55	**NBA Code:**	CV305
CO1	Select the appropriate sewer appurtenances and materials in sewer network.		
CO2	Design the sewers network and understand the self-purification process in flowing water.		
CO3	Design the varies physic- chemical treatment units		
CO4	Design the various biological treatment units		
CO5	Design various AOPs and low cost treatment units.		

Subject:	Highway engineering		
Subject Code:	18CV56	**NBA Code:**	CV306
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:	Surveying practice		
Subject Code:	18CVL57	**NBA Code:**	CV307
CO1	Apply the basic principles of engineering surveying and for linear and angular measurements.		
CO2	Comprehendeffectivelyfieldproceduresrequiredforaprofessionalsurveyor.		
CO3	Use techniques, skills and conventional surveying instruments necessary f o r engineering practice.		

Subject:	Concrete and highway materials laboratory		
Subject Code:	18CVL58	**NBA Code:**	CV308
CO1	To learn the procedure of testing concrete ingredients and properties of concrete as per standard code recommendations.		
CO2	To learn the procedure of testing bituminous materials as per standard code recommendations.		
CO3	To relate material characteristics to various application of construction.		

Subject:	Environmental studies		
Subject Code:	18CIV59	**NBA Code:**	CV309
CO1	To 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.		

COURSE OUTCOMES - 2018 SCHEME

6th SEMESTER

Subject:	Design of steel structural elements		
Subject Code:	18CV61	**NBA Code:**	CV310
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:	18CV62	**NBA Code:**	CV311
CO1	To plan and execute geotechnical site investigation program for different civil engineering projects		
CO2	To understand stress distribution and resulting settlement beneath the loaded footings on sand and clayey soils		
CO3	To estimate factor of safety against failure of slopes and to compute lateral pressure distribution behind earth retaining structures		
CO4	To determine bearing capacity of soil and achieve proficiency in proportioning shallow isolated and combined footings for uniform bearing pressure		
CO5	To estimate load carrying capacity of single and group of piles		

Subject:	Hydrology and irrigation engineering		
Subject Code:	18CV63	**NBA Code:**	CV312
CO1	Understand the concept of hydrology and components of hydrological cycle such as precipitation, infiltration, evaporation and transpiration		
CO2	Quantify runoff and use concept of unit hydrograph		
CO3	Demonstrate different methods of irrigation, methods of application of water and irrigation procedure		
CO4	Design canals and canal network based on the water requirement of various crops		
CO5	Determine the reservoir capacity		

Subject:	Railway, harbours, tunneling and airports		
Subject Code:	18CV645	**NBA Code:**	CV313
CO1	Understand the history and development, role of railways, railway planning and development based on essential criteria's.		
CO2	Learn different types of structural components, engineering properties of the material quantities required for construction		
CO3	Understand various types of geometrical elements, points and crossings, significance of maintenance of tracks.		
CO4	Design and plan airport layout, design facilities required for runway, taxiway and impart knowledge about visual aids		
CO5	Apply design features of tunnels, harbours, dock and necessary navigational aids; also expose them to various methods of tunneling and tunnel accessories.		

Subject:	Non-conventional energy sources		
Subject Code:	18ME651	**NBA Code:**	CV314
CO1	Describe the environmental aspects of non-conventional energy resources. In comparison with various conventional energy systems, their prospects and limitations		
CO2	Describe the use of solar energy and the various components used in the energy production with respect to applications like heating, cooling, desalination, power generation, drying, cooking etc.		
CO3	Appreciate the need of wind energy and the various components used in energy generation and know the classification		
CO4	Understand the concept of biomass energy resources and their classification, types of biogas plants – applications compare solar, wind and bio energy systems		
CO5	Acquire the knowledge of fuel cells, wave power, tidal power and geothermal principles and applications.		

Subject:	Software application laboratory		
Subject Code:	18CVL66	**NBA Code:**	CV315
CO1	Use industry standard software in a professional set up		
CO2	Understand the elements of finite element modelling, specification of loads and boundary condition, performing analysis and interpretation of results for final design		
CO3	Develop customized automation tools		

Subject:	Environmental engineering laboratory		
Subject Code:	18CVL67	**NBA Code:**	CV316
CO1	Estimate the concentration of different parameters such as pH, TDS, turbidity and conductivity		
CO2	Analysis of results and compare with standards		
CO3	Determine type of treatment, degree of treatment for water and wastewater		
CO4	Identify and analyse the parameter for the project work in environmental stream		
CO5	Understand the environmental significance and application in environmental engineering practice		

Subject:	Extensive survey project		
Subject Code:	18CVEP68	**NBA Code:**	CV317
CO1	Apply Surveying knowledge and tools effectively for the projects		
CO2	Understanding Task environment, Goals, responsibilities, Task focus, working in Teams towards common goals, Organizational performance expectations, technical and behavioral competencies.		
CO3	Application of individual effectiveness skills in team and organizational context, goal setting, time management, communication and presentation skills.		
CO4	Professional etiquettes at workplace, meeting and general		
CO5	Establishing trust-based relationships in teams & organizational environment		
CO6	Orientation towards conflicts in team and organizational environment, Understanding sources of conflicts, Conflict resolution styles and techniques		

COURSE OUTCOMES - 2018 SCHEME

7th SEMESTER

Subject:	Quantity surveying and contract management		
Subject Code:	18CV71	**NBA Code:**	CV401
CO1	To provide the students with the ability to estimate the quantities of item of works involved in buildings.		
CO2	To provide the students with the ability to estimate the quantities of item of works involved in road works, structural works and water supply and sanitary works		
CO3	To provide students with the ability to do rate analysis & specifications		
CO4	To assess contract and tender documents for various construction works		
CO5	To provide the student with the ability to do valuation of properties		

Subject:	Design of RC and steel structures		
Subject Code:	18CV72	**NBA Code:**	CV402
CO1	Students will acquire the basic knowledge in design of RCC and Steel Structures.		
CO2	Students will have the ability to follow design procedures as per codal provisions and skills to arrive at structurally safe RC and Steel members.		

Subject:	Pavement materials and construction		
Subject Code:	18CV733	**NBA Code:**	CV403
CO1	Students will be able to evaluate and assess the suitability of any pavement material to be used		
CO2	various components of pavement by conducting required tests as per IS,IRC specifications		
CO3	Students will be able to formulate the proportions of different sizes of aggregates to suit gradation		
CO4	criteria for various mixes as per MORTH and also design bituminous mixes.		

Subject:	Urban transport planning		
Subject Code:	18CV745	**NBA Code:**	CV404
CO1	Design, conduct and administer surveys to provide the data required for transportation planning.		
CO2	Supervise the process of data collection about travel behavior and analyze the data for use in transport planning.		
CO3	Develop model split and analyses the trip distribution over the study area		
CO4	Calibrate model split and analyze the trip distribution over the study area		
CO5	Adopt the steps that are necessary to complete a long-term transportation plan.		

Subject:	Energy and environment		
Subject Code:	18ME751	**NBA Code:**	CV405
CO1	Understand energy scenario, energy sources and their utilization		
CO2	Understand various methods of energy storage, energy management and economic analysis		
CO3	Analyze the awareness about environment ecosystem		
CO4	Understand the environment pollution		
CO5	Understand the social issues and acts		

Subject:	Computer aided detailing of structures		
Subject Code:	18CVL76	**NBA Code:**	CV406
CO1	Prepare detailed working drawings		

Subject:	Geotechnical engineering laboratory		
Subject Code:	18CVL77	**NBA Code:**	CV407
CO1	Physical and index properties of the soil		
CO2	Classify based on index properties and field identification		
CO3	To determine OMC and MDD, plan and assess field compaction program		
CO4	Shear strength and consolidation parameters to assess strength and deformation characteristics		
CO5	In-situ shear strength characteristics (SPT-Demonstration)		

COURSE OUTCOMES - 2018 SCHEME

8th SEMESTER

Subject:	Design of pre-stressed concrete		
Subject Code:	18CV81	**NBA Code:**	CV409
CO1	Understand the requirement of PSC members for present scenario.		
CO2	Analyse the stresses encountered in PSC element during transfer and at working.		
CO3	Understand the effectiveness of the design of PSC after studying losses		
CO4	Capable of analyzing the PSC element and finding its efficiency.		

Subject:	Pavement design		
Subject Code:	18CV825	**NBA Code:**	CV410
CO1	Systematically generate and compile required data for design of pavement		
CO2	Analyse stress, strain and deflection by boussineq's bur mister's and westergaard's theory		
CO3	Design rigid pavement and flexible pavement conforming to IRC58-2002 and IRC37-2001		
CO4	Evaluate the performance of the pavement and also develops maintenance statement based on site specific requirements		

Subject:	Project work phase 2		
Subject Code:	18CVP83	**NBA Code:**	CV411
CO1	Describe the project and be able to defend it.		
CO2	Develop critical thinking and problem solving skills.		
CO3	Learn to use modern tools and techniques.		
CO4	Communicate effectively and to present ideas clearly and coherently both in written and oral forms.		
CO5	Develop skills to work in a team to achieve common goal. Develop skills of project management and finance. Develop skills of self-learning, evaluate their learning and take appropriate actions to improve it.		

Subject:	Technical seminar		
Subject Code:	18CVS84	**NBA Code:**	CV412
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.		
CO6	Develop the skills to enable lifelong learning		

Subject:	Internship		
Subject Code:	18CVI85	**NBA Code:**	CV413
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.		