Government of Karnataka

DEPARTMENT OF COLLEGIATE AND TECHNICAL EDUCATION

Curriculum Structure

III Semester Scheme of Studies- Diploma in Civil Engineering

Sl. No.	Course Category / Teaching Department	Course Code	Course Name	Hours per week			Total contact hrs /week	Credits	CIE Marks		SEE Marks		Total Marks	Min Marks for Passing (including CIE marks)	Assigned Grade	Grade Point	SGPA and CGPA
				L	T	P			Max	Min	Max	Min					
Integrated Courses																	Both SGPA & CGPA
1	PC/CE	20CE31P	Engineering Mechanics and Strength of materials	3	1	4	8	6	60	24	40	16	100	40			
2	PC/CE	20CE32P	Modern Surveying	3	1	4	8	6	60	24	40	16	100	40			
3	PC/CE	20CE33P	Construction Techniques	3	1	4	8	6	60	24	40	16	100	40			
4	PC/CE	20CE34P	Building Drawing using CADD	3	1	4	8	6	60	24	40	16	100	40			
Audit Course																	
5	AU/KA	20KA31T	ಸಾಹಿತ್ಯ ಸಿಂಚನ-II/ ಬಳಕೆ ಕನ್ನಡ-II	2	0	0	2	2	50	20	-	-	50	20			
Total				**14**	**4**	**16**	**34**	**26**	**290**	**116**	**160**	**64**	**450**	**180**			

PC: Programme Core:: AU-Audit Course:: KA: Kannada:: L: Lecture:: T: Tutorial:: P: Practice

Government of Karnataka

DEPARTMENT OF COLLEGIATE AND TECHNICAL EDUCATION

Programme	Civil Engineering	**Semester**	Third Semester
Course Code	20CE31P	**Type of Course**	Programme Core
Course Name	Engineering Mechanics & Strength of Materials	**Contact Hours**	8 hours/week 104 hours/semester
Teaching Scheme	L:T:P :: 3:1:4	**Credits**	6
CIE Marks	60	**SEE Marks**	40

1. Rationale: The study of strength of materials often refers to various methods of calculating the stresses and strains in structural members such as beams, columns and shafts. The methods employed to predict the response of a structure under loading and its susceptibility to various failure modes takes into account the properties of the materials such as its yield strength, ultimate strength, Young's modulus, and Poisson's ratio. In addition, the mechanical elements, geometric properties such as its length, width, thickness, boundary constraints and abrupt changes in geometry such as holes are considered.

2. Course Outcomes/Skill Sets: At the end of this course students will be able to:

CO-01	Explain the potential impact of forces / stresses on structural elements / materials in a given condition.
CO-02	Calculate the moment of Inertia for a given symmetrical or asymmetrical geometric sections.
CO-03	Calculate shear force and bending moments for different loading conditions and support conditions, draw the SFD & BMD and validate the analysis using Ansys software.
CO-04	Calculate bending and shear stresses in beams under different load conditions and validate the analysis using Ansys software.
CO-05	Calculate and validate the safety of a column for various given loads and end conditions.

3. Course Content

Week	**CO**	**PO**	**Lecture (Knowledge Criteria)**	**Tutorial (Activity Criteria)**	**Practice (Performance Criteria)**
			3 hours/week	1 hour/week	4 hours/week(2 hours/batch twice in a week)
1	1	1, 2	1.Force and characteristics of a force. Force system: Classification of force system according to plane		1 & 2. Verification of lami's Theorem.

			and line of action- Principle of transmissibility of forces, moment of a force, Resolution & composition of forces. 2. Resultant force, Law of moments, Resultant of Concurrent and non-concurrent force system. Equilibrium conditions. 3.Simple Problems on determination of resultant of con current & non concurrent force systems.	1.Determine Forces in members of a truss at the given joint. 2.Determination of resultant of forces acting on retaining wall and trapezoidal dam section.	
2	1	1, 2	1.Rigid body, plastic body Mechanical properties of metal- Rigidity, Elasticity, Plasticity. 2.Compressibility, Hardness, Toughness, Stiffness, Brittleness, Ductility 3. Malleability, Creep, Fatigue, tenacity, durability. Testing procedures and importance of each property of materials.	1. Compare the properties of Hard, soft, brittle and Ductile material.	1. Hardness test to evaluate a hardness of given material Example: Mild Steel, Stainless steel, Wood, Copper, Bronze, Brass, Aluminium, Glass. 2. Impact test to evaluate toughness of a given material Example: Mild Steel, Stainless steel, Wood, Copper, Bronze, Brass, Aluminium, Glass.
3	1	1, 2	1. Stress, strain, Hooke's law Types of stresses - Normal stress and Shear stress Types of normal stress - Tensile stress and Compressive stress 2.Types of strains- Normal strain and Shear strain Types of normal strain - Longitudinal strain, Lateral strain and volumetric strain Types of Lateral strain - Tensile strain and Compressive strain 3.Problems	1. Plot Stress/strain graph for various structural steel	1.Conduct tensile test on following materials and plot Stress-strain curve a)Mild steel b)HYSD bar Determine yield stress/ proof stress, Ultimate stress, breaking stress and percentage of elongation, Young's Modulus 2.Conduct tensile test on following materials and plot Stress-strain curve a) Plastic b) Bamboo c) Fibres Determine yield stress/ proof stress, Ultimate stress, breaking stress and percentage of elongation, Young's Modulus

4	1	1, 2	1.Elongation and Contraction - Poisson's Ratio and Modulus of Elasticity. 2.Problems 3.Problems	1. Determine Stresses and Modulus of Elasticity in Civil Engineering Building materials	1. Conduct tensile test and Measure strain using electric strain gauge on following materials and plot Stress-strain curve. a) Mild steel b) HYSD bar 2. Determine yield stress/ proof stress, Ultimate stress, breaking stress and percentage of elongation, Young's Modulus and compare the methods of finding yield stress.
5	1	1,2	1. Stresses in bars of composite section (Modular ratio). 2.Principles of superposition, Deformation of uniform bars and bars of varying cross section subjected to constant load & varying loads. 3.Volumetric strain & change in volume, Relation among elastic constants, Thermal stresses.	1. Analyse the thermal stresses in different materials using Open-source Software.	1. Problems on axially loaded composite sections. 2. Analysis of Composite Section -Interpretation of Results. (Analysis by ANSYS software)
6	2	1, 2,3	1 Centre of gravity & centroid, Moment of Inertia for Plane lamina: radius of gyration, elastic sectional modulus, parallel and perpendicular axes theorems. 2. Moment of Inertia for rectangle, square, circle, semi-circle, and quarter circle and triangle section. 3. M.I of symmetrical and unsymmetrical I section, Channel section.	1. Study and compare different geometrical shapes of structural elements like beams, columns, members of truss, shafts etc.	1. Calculation of Centroid and Moment of Inertia of different sections using CADD software. 2. Finding the centroid and moment of inertia of irregular sections by manual method (Open ended Experiment) Comparison of M I with manual calculation and CADD software.
7	2	1, 2,3	1. M I of T section, L section, hollow sections, built-up sections about centroidal axes and any other reference axis. 2.Problems.	1. Calculation of Moment of Inertia for other built-up sections.	1 & 2. Calculation of centroid and Moment of Inertia by Open-Source application/Ansys for a given section and Influence of MI on a strength of section.

			3.Polar moment of inertia of solid circular sections. - problems.		
8	3	1, 2,3	1. Types of beams –simply supported, cantilever, fixed continuous and overhanging beams. Types of supports: Roller support, Hinged support, Fixed support and Pinned support. 2. Determinate structures: Types of loading- Axial load, Transverse load, point load, uniformly distributed load, uniform varying load, moment, support reactions for determinate structures. 3. Concept of shear force and bending moment, sign convention. Relation between bending moment, shear force and rate of loading.	1. Differentiate between line, Surface and solid structural elements on the basis of their behaviour under loads.	1.Calculation of Bending Moment and shear force for simply supported beams with UDL and point load. 2.Draw Shear force and bending moment diagrams for simply supported beams. (UDL and point load).
9	3	1, 2,3	1. Calculation of Bending Moment and shear force for cantilever beams with UDL and point load and Draw Shear force and bending moment diagrams for cantilever beams with UDL and point load. 2. Problems. 3. Problems.	1. Calculation of Bending Moment and shear force for for fixed beams with UDL and point load. 2.Draw Shear force and bending moment diagrams for fixed beam beams. (UDL and point load).	1. Analyse simply supported beams, subjected to different types of loads, for SFD and BMD using ANSYS software. 2. Analyse cantilever beams, subjected to different types of loads, for SFD and BMD using ANSYS software.
10	3	1, 2,3	1. Calculation of Bending Moment and shear force for overhanging beams with UDL and point load Draw Shear force and bending moment diagrams for overhanging beams with UDL and point load and Locate points of contra- flexure. 2. Problems.	1.Calculation of bending moment and shear force foe an overhanging beam of bicycle stand.	1& 2. Analyse overhanging beams, subjected to different types of loads, for SFD and BMD using ANSYS software.

			3. Problems		
11	4	1, 2,3	1. Bending stress in beam, Assumptions in simple bending theory, bending equations.	1. Determine bending stress and shear stress across a section of structural elements like RCC beam, Steel beam and purlins.	1. Problems on Bending stress and preparation of bending stress distribution diagram- variation of bending.
			2. Neutral axis, Modulus of rupture, section modulus, flexural rigidity, moment of resistance.		
			3. Bending and Shear Stresses across the cross section of the beams- rectangular and T section.		2. Flexure Test on materials like steel, concrete specimens - Two Point Load system.
12	5	1, 2,3	1. Slope and deflection using Moment area method for simply supported and cantilever beams subjected to symmetrical point loads and UDL.	1.Calculation of deflection for Overhanging beams 2.Limitation of deflection for various structural Elements	1.Calculation and analysis of beams for slope and deflection by Open-Source application / ANSYS software 2.Animations of deflection
			2. Problems		
			3. Problems		
13	5	1, 2,3	1. Introduction – Short and long columns - Euler's theory	1.Study and prepare a report on the failure modes of Column and Influence of L/D ratio on the Strength of column.	1. Problems
			2. Effective length, slenderness ratio - radius of gyration, buckling load, crippling load		
			3. Assumptions, Euler's Buckling load for different end conditions, Limitations of Euler's theory		2. Calculation and analysis of crippling load by Open-Source application/ANSYS software for Axial load, eccentric load and column with different materials
Total in hours			**39**	**13**	**52**

NOTE 1: The course content shall be delivered through lectures, PowerPoint presentations, video demonstrations and field visits.

NOTE 2: The TUTORIAL (Activity criteria) shall be conducted / executed by the student (Minimum ONE suggested activity from each week) and to be submitted in portfolio evaluation of activities through rubrics to the faculty.

NOTE 3: The PRACTICE (Performance criteria) shall be conducted by the student and observations and report to be submitted at the end of each session to the faculty.

4. CIE and SEE Assessment Methodologies

Sl. No	Assessment	Test Week	Duration In minutes	Max marks	Conversion
1.	CIE-1 Written Test	5	80	30	Average of three tests 30
2.	CIE-2 Written Test	9	80	30	
3	CIE-3 Written Test	13	80	30	
4.	CIE-4 Skill Test-Practice	6	180	100	Average of two skill test reduced to 20
5	CIE-5 Skill Test-Practice	12	180	100	
6	CIE-6 Portfolio continuous evaluation of Tutorial sessions through Rubrics	1-13		10	10
Total CIE Marks					60
Semester End Examination (Practice)			180	100	40
Total Marks					**100**

5. Format for CIE written Test

Course Name	**Strength of Materials**	Test	I/II/III	Sem	III/IV
Course Code	**20CE31P**	Duration	80 Min	Marks	30

Note: Answer any one full question from each section. Each full question carries 10 marks.

Section	Assessment Questions	Cognitive Levels	Course Outcome	Marks
I	1			
	2			
II	3			
	4			
III	5			
	6			

Note for the Course coordinator: Each question may have one, two or three subdivisions. Optional questions in each section carry the same weightage of marks, Cognitive level and course outcomes.

6. Rubrics for Assessment of Activity (Qualitative Assessment)

Sl. No.	Dimension	Beginner	Intermediate	Good	Advanced	Expert	Students Score
		2	4	6	8	10	
1		Descriptor	Descriptor	Descriptor	Descriptor	Descriptor	8
2		Descriptor	Descriptor	Descriptor	Descriptor	Descriptor	6
3		Descriptor	Descriptor	Descriptor	Descriptor	Descriptor	2

4		Descriptor	Descriptor	Descriptor	Descriptor	Descriptor	2
	Average Marks= (8+6+2+2)/4=4.5						**5**

Note: Dimension and Descriptor shall be defined by the respective course coordinator as per the activities

7. Reference:

Sl. No.	Description
1	**Ramamurtham. S.,** ***"Strength of Materials",*** 14th Edition, DhanpatRai Publications
2	**SS Bhavikatti, Strength of Materials**
3	Fundamentals of strength of materials by **P N Chandramouli"** PHI New delhi
4	Relevant IS Codes

8. a. CIE Skill Test 1- Scheme of Evaluation

SL. No.	Particulars/Dimension	Marks
1	Portfolio evaluation for practice sessions -Performance criteria (Observations and report)	10
2	One Question on forces and its validation with ANSYS software	10
3	One Experimental Question to Conduct hardness test/tensile test/Impact test for a given specimen. Writing Observations and Tabular column, Equation with all notation-10 Conduction of Experiment-10 Calculation and result with graph-20	40
4	Manual Calculation of Centroid and Moment of Inertia of given section and validate using CADD	30
5	Viva- voce	10
	Total Marks	**100**

8. b. CIE Skill Test 2 - Scheme of Evaluation

SL. No.	Particulars/Dimension	Marks
1	Portfolio evaluation for practice sessions -Performance criteria (Observations and report)	10
2	Manual Calculation of Shear force and Bending moment - 10 marks Draw SFD & BMD for Simply supported beam / cantilever beam / overhanging beam with point load and UDL - 10 marks Validation with ANSYS software- 10 marks	30
3	One Experimental Question on UTM to Conduct a flexural test for a given specimen Writing Observations and Tabular column, Equation with all notation-10 marks Conduction of Experiment-10 marks Calculation and result -10 marks	30
4	One question on column deflection/bending and its validation with ANSYS software	20
5	Viva- voce	10
	Total Marks	**100**

8. c. SEE Scheme of Evaluation

SL. No.	Particulars/Dimension	Marks
1	One Experimental Question to Conduct hardness test/tensile test/Impact test/ flexural test for a given specimen. Writing Observations and Tabular column, Equation with all notation-10 marks Conduction of Experiment-10 marks Calculation and result with graph-10 marks	30
2	Manual Calculation of Shear force and Bending moment - 10 marks Draw SFD & BMD for Simply supported beam / cantilever beam / overhanging beam with point load and UDL - 10 marks Validation with ANSYS software- 10 marks	30

3	a. One question on column deflection/bending and its validation with ANSYS software - 20 marks **OR** b. Manual Calculation of Centroid and Moment of Inertia of given section and validate using CADD - 20 marks	20
4	Viva- voce	20
	Total Marks	**100**

Note for the External Examiner: The choice between the questions 3a and 3b shall be done by the external examiner.

9. Equipment/software list with Specification for a batch of 20 students

Sl. No.	Particulars	Specification	Quantity
1	Lami's apparatus	It Consists of a board of about 65 × 50cm, with two aluminium pulleys, on clamp, for mounting on board in any desired position. Complete with three mass hangers and 12 slotted masses, each of 50g each.	20
2	Hardness test apparatus-Rockwell	Model Number: TRSN. Test Loads: 60,100,150 kgs (Rockwell) Initial Loads: 10 (kgs) Maximum Test Height: 222 mm. Depth of Throat: 130 mm. Machine Height: 627 mm. Net weight: Approx. 65 kg. Size of base: Approx. 450 * 265 mm.	5
3	Universal Hardness test apparatus	• Screen display of hardness value and scale with 0.1-unit resolution • Built-in x50 total magnification • Variable test sequence timing from 1 to 50 s • Multiple loads available – Vickers: 3, 5, 10, 30 and 100 kgf – Brinell: 5, 10, 30, 62.5 and 187.5 kgf	2

		– Rockwell: 10, 60, 100 and 150 kgf	
4	Impact test apparatus-charpy's apparatus	Model 50 Maximum Capacity Units- J 500 Maximum Scale Graduation Units- J 0.1 Overall Size without Protection Guard (Approx.) L x W x H Units- m 1.1 x 0.45 x 1.65 Overall Size with Protection Guard (Approx.) L x W x H Units- m 2.2 x 1.2 x 2.1 Net Weight of Machine (Approx.) Units- kg 500	4
5	UTM	Force range: 10kN, 20kN, 30kN, 50kN, and 100kN. ... Crosshead speed: 0.05 to 500 mm/min. Speed accuracy: < 0.5% Load cell accuracy: ± 0.5% of reading. Software: software for tensile, compression + bending incl. Electrical supply: 220-230Vac, 50Hz, 1kVA, single phase 3 wires. Accessories: ... Weight:	1
6	Dial Gauge With magnetic stand	Clamping Force (N): 600 N Overall Height (mm): 220 mm Applicable for: For Dial Test Indicator Size (mm): 10 mm	4
7	Electric Strain gauge.	Guage Length 0.3mm to 60mm Guage Resistance Within ±0.3% of the nominal resistance	4
8	Desktop Computers / Laptops	8 GB RAM, 512GB HARD DRIVE, i5 and above 2.5 GHz PROCESSOR,	20
9	Computer Aided Drafting Software-AUTOCAD	LICENSED, Ver. 2020 and above	1 / computer
10	ANSYS	LICENSED, Ver. 2020 and above	1 / computer

Government of Karnataka

DEPARTMENT OF COLLEGIATE AND TECHNICAL EDUCATION

Programme	Civil Engineering	**Semester**	Third Semester
Course Code	20CE32P	**Type of Course**	Programme Core
Course Name	Modern Surveying	**Contact Hours**	8 hours/week 104 hours/semester
Teaching Scheme	L: T:P:: 3:1:4	**Credits**	6
CIE Marks	60	**SEE Marks**	40

1. Rationale Civil engineering is one of the oldest engineering disciplines in the world. In the era of globalization today, technology has brought significant advancements in surveying instruments and technology. Available precise digital surveying instruments are used in the field of civil engineering currently due to their accuracy, speed and easy operation. Since remote sensing, GIS, GPS, photogrammetric survey is a vital discipline and being widely used for plotting and storing spatial information, it is expected the students should know the basics of the same to apply it in the field. Through this course students will develop the desired skills and competencies which are expected from them for survey related works.

2. Course Outcomes/Skill Sets: At the end of this course students will be able to:

CO-01	Select and explain the use of the right instrument for surveying a given area, structure and/or topography.
CO-02	Prepare an area map for a specific construction activity by measuring distances, angles, choosing the right bearings, relative position and contours using the appropriate instrument(s).
CO-03	Calculate heights of different structures, relative altitudes and distances of different points on ground using appropriate instruments.
CO-04	Use GPS, remote sensing, advanced instruments and other techniques for surveying of specific areas.

3. Course Content

Week	CO	PO	Lecture (Knowledge Criteria)	Tutorial (Activity Criteria)	Practice (Performance Criteria)
			3 hours/week	1 hour/week	4 hours/week (2 hours/batch twice in a week)
1	01 02 03	1,2, 4,7	1. Contours, Importance of contour maps. Characteristics of contours.	1. Study the contour maps	1. Conduct block contouring for a minimum area of

			2. Methods of plotting contours. Factors affecting contour interval. 3. Method of preparing contour map from the given RLs of grid points with examples.	of different topography. 2 Study the Uses of Contours in civil engineering field 3 Measure the volume of Reservoir from contour maps.	40 m x 40 m to draw its contour plan at a suitable contour interval. 2. Find out the area enclosed by the contours using AutoCAD.
2	1	1,2, 4,7	1. Component parts of transit theodolite and their functions. 2. Reading the vernier, Salient features and relationship between the fundamental axes of transit theodolite. 3. Technical terms used. Temporary adjustments.	1. List the Applications of different types of theodolites.	1. Measure horizontal angle between the given points. 2. Measure vertical angle between the given points.
3	1	1,2, 4,7	1. Theodolite traversing. Open and Closed Traverse. 2. Theodolite traversing by included angle method and deflection angle method. 3. Checks for open and closed traverse, Calculation of bearing from angles. Traverse computation-Latitude, Departure.	1. Study the Consecutive coordinates, independent coordinates. 2. Balance the traverse using spreadsheet by Bowditch rule or Transit rule. 3.Conduct Contouring using Theodolite.	1.Measure horizontal angle by repetition and reiteration method. 2. Carry out survey project for closed traverse for minimum 5 sides by locating details using theodolite.
4	2	1,2, 4,7	1. Trigonometrical Survey and its applications. 2. Elevations and Distances of accessible points whose base is accessible-Single plane method-Simple problems. 3. Elevations and Distances of inaccessible points whose base is inaccessible-Single plane method-Simple problems.	1. How do we measure heights of mountains? 2.Measure height of inaccessible high-rise towers.	1. Measure height of an object whose base is accessible. 2. Measure height of an object whose base is inaccessible.

5	2	1,2, 4,7	1. Tachometer: Principle of tachometry and component parts. Analytic lens 2. Tachometric formula for horizontal distance with telescope horizontal and staff vertical. 3. Method of determining Horizontal and vertical distances with tachometer by fixed hair method and staff held vertical.	1. List the applications of Tachometric survey. 2. List the limitations of tachometry.	1. Determine Tachometric constants. 2. Calculate the reduced levels and horizontal distances of given points using tachometer.
6	3	1,2, 4,7	1. Total Station: Introduction, Integral parts, Applications. 2. Working principle, Advantages, Disadvantages. 3. Use of function keys. Precautions to be taken while using a Total Station.	1. List the Applications of different types of Total Stations. 2.Differentiate between theodolite and Total station.	1. Component parts and General commands used. 2. Instrument preparation and setting up.
7	3	1,2, 4,7	1. Setting up a back sight. Azimuth mark, control point. Change point - procedure to shift change point and precautions to be taken. General settings. 2. Automatic Target Recognition, Field Book recording, Radial Shoot. 3. Survey Station Description (codes). Occupied point (Instrument Station) Entries.	1. Calculate Height using Trigonometric survey and compare results with total station.	1. Find out the Horizontal angle, Vertical angle of given points. 2. Find out the distance, gradient and difference in height between two inaccessible points using Total Station.
8	3	1,2, 4,7	1. 3D coordinates: By Resection. Coordinate calculation. Offset: Single distance offset. 2. Date Retrieval, Field Generated Graphics. Data Gathering Components, Data Processing Components of the system. 3. Data plotting, Field computers, Modem for data transfer.	1. Compare and prepare report on accuracy of results between Theodolite and Total Station.	1. Stake out using Total Station- Find a specific point and its coordinates in the field. 2. Find out the height of a remote point like tip of a transmission tower or chimney using Total Station.
9	3	1,2, 4,7	1. Interfacing the Data Collector with a Computer, Digital Data.	1. Compare and prepare a report on time requirements	1& 2: Prepare a topographic sketch of a given area using Total station and plot the

			2. Digital transfer of data to Application software. Requirements of a data collector. 3.Calibrating the Instrument Equipment maintenance, Maintaining battery power.	to complete a particular activity by Total Station with other equipment.	contour plan using AutoCAD / Civil 3D/ Auto plotter.
10	3	1,2, 4,7	1. Total station survey system error sources and how to avoid them. 2& 3. Controlling errors.	1. How Data is transferred from Total Station to other electronic devices. 2.Collect the survey sketch of any place and mark the boundaries and determine the area using total station	1. Conduct a closed traverse for a given area using Total Station. (Including minimum two change points) 2. Plot the area map of the closed traverse conducted using AutoCAD and Find the area.
11	4	1,2, 4,7	Construction Layout Using Total Station 1. How to set control points around the layout site. 2. How control points and coordinates are used to set out the position of buildings (how the positions of the actual structures are fixed and site profiles to guide the excavation and pouring concrete into the foundations) 3. Setting up site profiles and sight rails for Drainage.	List the points that should be kept in mind while using Total station during the operation of a. Levelling b. Measuring distances c. Measuring angles. d. Contouring	1. Set out control points for centre line marking of a building using the total station. 2. Set out control points for laying of pipeline using total station.
12	4	1,2, 4,7	1. Aerial Surveying, GPS: Introduction, Applications. Positioning methods, Errors and Limitations in GPS. applications of Google maps in civil Engineering. 2. Remote Sensing: Introduction, Basic components of remote sensing, energy interaction with the earth surfaces.	1. How the Remote sensing Interpretation is done? 2. Study the classification, applications, advantages & Disadvantages	Virtual Media and Field Visit

			3. Applications of remote sensing in mining, land use/land cover, mapping, disaster management and environment.	of GPS surveying 3. Prepare a Technical Report on Field Visit.	
13	4	1,2, 4,7	1. GIS: Overview, components Applications and Limitations. 2. Drone Surveying: Overview, Applications and Limitations. 3. Lidar: Overview, Applications and Advantages. Hyper spectral Imagery.	1. What is the need of GIS for civil engineers? 2. Prepare a Technical Report on Field Visit.	Virtual Media and Field Visit
Total in hours			**39**	**13**	**52**

NOTE 1: The course content shall be delivered through lectures, PowerPoint presentations, video demonstrations and field visits.

NOTE 2: The TUTORIAL (Activity criteria) shall be conducted / executed by the student (Minimum ONE suggested activity from each week) and to be submitted in portfolio evaluation of activities through rubrics to the faculty.

NOTE 3: The PRACTICE (Performance criteria) shall be conducted by the student and observations and report to be submitted at the end of each session to the faculty.

4. CIE and SEE Assessment Methodologies

Sl. No	**Assessment**	**Test Week**	**Duration** In minutes	**Max marks**	**Conversion**
1.	CIE-1 Written Test	5	80	30	Average of three tests 30
2.	CIE-2 Written Test	9	80	30	
3	CIE-3 Written Test	13	80	30	
4.	CIE-4 Skill Test-Practice	6	180	100	Average of two skill test reduced to 20
5	CIE-5 Skill Test-Practice	12	180	100	
6	CIE-6 Portfolio continuous evaluation of Tutorial sessions through Rubrics	1-13		10	10
Total CIE Marks					60
Semester End Examination (Practice)			180	100	40
Total Marks					**100**

5. Format for CIE written Test

Course Name	**Surveying**	Test	I/II/III	Sem	III/IV
Course Code	**20CE32P**	Duration	80 Min	Marks	30
Note: Answer any one full question from each section. Each full question carries 10 marks.					

Section	Assessment Questions	Cognitive Levels	Course Outcome	Marks

I	1			
	2			
II	3			
	4			
III	5			
	6			
Note for the Course coordinator: Each question may have one, two or three subdivisions. Optional questions in each section carry the same weightage of marks, Cognitive level and course outcomes.				

6. Rubrics for Assessment of Activity (Qualitative Assessment)

Sl. No.	Dimension	Beginner	Intermediate	Good	Advanced	Expert	Students Score
		2	4	6	8	10	
1		Descriptor	Descriptor	Descriptor	Descriptor	Descriptor	8
2		Descriptor	Descriptor	Descriptor	Descriptor	Descriptor	6
3		Descriptor	Descriptor	Descriptor	Descriptor	Descriptor	2
4		Descriptor	Descriptor	Descriptor	Descriptor	Descriptor	2
	Average Marks= (8+6+2+2)/4=4.5						**5**

Note: Dimension and Descriptor shall be defined by the respective course coordinator as per the activities

7. Reference:

Sl. No.	Description
1	**Duggal, S. K., Surveying Vol. I & II,** Tata Mcgraw Hill, New Delhi
2	**Subramanian, R., Surveying & Levelling,** Oxford University Press, New Delhi
3	**Punamia, B.C., Surveying Vol. I, II & III,** Laxmi Publications
4	**Kanetkar, T.P. and Kulkarni, S.V., Surveying and Levelling Vol. I & II,** Pune Vidyarthi Gruh
5	**Arora, K.R., Surveying Vol. I, II & III,** Standard Book House. New Delhi
6	**Basak, N.N., Surveying and Levelling,** Tata Mcgraw Hill, New Delhi
7	**A. Bannister, S. Raymond, R. Baker, "Surveying",** Pearson, 7th ed., NewDelhi
8	**Agor, R., Surveying and Levelling,** Khanna Publishers, New Delhi
9	**Agor, R. Advanced Surveying**, Khanna Publishers, New Delhi

10	**Roy, S.K., Fundamentals of Surveying,** Prentice Hall India, New Delhi
11	**Remote Sensing and GIS by B Bhatia,** Oxford University Press, New Delhi.
12	**Remote sensing and Image interpretation by T.M Lillesand, R.W Kiefer and J.W Chipman,** 5th edition, John Wiley and Sons India
13	**Lo, C.P. & Yeung A.K.W., Concepts and Techniques of Geographic Information Systems,** Prentice Hall of India, New Delhi, 2002
14	**Anji Reddy, M., Remote Sensing and Geographical Information Systems,** B.S.Publications, Hyderabad, 2001

8. a. CIE Skill Test 1- Scheme of Evaluation

SL. No.	Particulars/Dimension	Marks
1	Portfolio evaluation for practice sessions -Performance criteria (Observations and report)	10
2	Experiment on theodolite a. Measurement of horizontal angle (Repetition or Reiteration method)/ measurement of Vertical angle using theodolite. **OR** b. Carry out closed traverse for minimum 5 sides including locating details using theodolite. (i) Writing Field Procedure, formula and tabular column -10 marks (ii) Setting and conduction - 20 marks (iii) Observations, Recordings and calculations-15 marks (iv) Interpretation of result and Plotting- 05 marks	50
3	a. Measure height of an object whose base is accessible / inaccessible by Trigonometrical survey. **OR** b. Determine Tachometric constants / Calculate the reduced levels and horizontal distances of given points by tachometric survey (i) Writing Field Procedure, formula and tabular column -05 marks (ii) Setting and conduction - 10 marks (iii) Observations, Recordings and calculations-10 marks	30

	(iv) Interpretation of result and Plotting- 05 marks	
4	Viva-Voce	10
	Total Marks	**100**

Note for the Examiner:

1. The choice between the questions 2a and 2b shall be done by the examiner.
2. The choice between the questions 3a and 3b shall be done by the examiner.

8. b. CIE Skill Test 2 - Scheme of evaluation

SL. No.	Particulars/Dimension	Marks
1	Portfolio evaluation for practice sessions -Performance criteria (Observations and report)	10
2	Experiment on total station. a. Find out the Horizontal angle/ Vertical angle/ distance/gradient/difference in height of given points using total station. **OR** b. Find a specific point and its coordinates in the field/ height of a remote point using Total Station. (i) Writing Field Procedure, formula and tabular column -10 marks (ii) Setting and operation - 10 marks (iii) Observations, Recordings and calculations-10 marks (iv) Interpretation of result and Plotting- 10 marks	40
3	Experiment on total station. a. Prepare a contour plan of a given area using Total station and plot it using CADD. **OR** b. Form a closed traverse using Total Station, Plot the area map using CADD and find the area of closed traverse (i) Writing Field Procedure, formula and tabular column -10 marks (ii) Setting and operation - 10 marks (iii) Observations, Recordings and calculations-10 marks	40

	(iv) Interpretation of result and Plotting- 10 marks	
4	Viva-Voce	10
	Total Marks	**100**

Note for the Examiner:

1. The choice between the questions 2a and 2b shall be done by the examiner.
2. The choice between the questions 3a and 3b shall be done by the examiner.

8. c. SEE Scheme of Evaluation

SL. No.	Particulars/Dimension	Marks
1	a. Experiment on theodolite (i) Writing Field Procedure, formula and tabular column -10 marks (ii) Setting and conduction - 15 marks (iii) Observations, Recordings and calculations-10 marks (iv)Interpretation of result and Plotting- 05 marks	40
2	Experiment on total station (i) Writing Field Procedure, formula and tabular column -10 marks (ii) Setting and operation - 15 marks (iii) Observations, Recordings and calculations-10 marks (iv)Interpretation of result and Plotting- 05 marks	40
3	Viva-Voce	20
	Total Marks	**100**

9. Equipment/software list with Specification for a batch of 20 students

Sl. No.	Particulars	Specification	Quantity

1	Dumpy Level with accessories	Length of Telescope: 300mm. Length: 215mm Short Distance:1.5m Objective aperture: 32mm	4
2	Auto Level with accessories	Accuracy (MM): 1/16 in. per km Double-run (2.0 mm), Magnification: Choice of 24x, 28x, 32x, Operating Temperature Range: -4 to +122 Deg F (-20 to +50 Deg C), Diameter of Objective: 1.26 in. (32 mm), Field of View: 2.5 ft. at 100 ft. (1 Deg 25 Feet)	4
3	Telescopic Levelling staff 5M	Material: Aluminium. Measuring Range: 1M/Unit. Resolution: 2cm	4
4	Ranging rod 2m	Circular / Octagonal Ranging Rods preferably circular with 3 to 5 cm diameter made up of either seasoned solid bamboo stick or metal conduit pipe of length 2 to 3 meters, with conical metallic shoe fitted at bottom & fully painted with 20 cm. long colour bands of either of the following combinations. Salient Features: a) Black & White - size 2 meters. b) Red & White - size 3 meters	5
5	Arrows	Material: Steel Ringed. Top:35 mm Colour: Red & White	6
6	Engineers Chain	Chain-30 Mtr or 100 Feet in 100 Links in Metal Tags & Rings & Brass Handle Material: MS Wire & Brass	4
7	Measuring Tape 15m	Tapes Type Fibreglass Measurement Tape Colour Grey	4
8	Prism and prism pole	Colour: Red, Material: Aluminium, Accuracy:< 5 Second, Offset:0/-30mm, Thickness:64 mm	2

9	Total Station	Magnification 24x, Field of View 1–30-inch, Minimum Focusing Distance1.5 Meter, Singles Prism Distance Measurement 4.0 Km, Accuracy 3mm +2ppm	2
10	Prismatic compass with stand	Aluminium Prismatic Compass, Packaging Type: Carton Box, Size/Diameter: 4 Inch, Weight 539 grams	4
11	Twenty Second Transit Theodolite with accessories.	Angle Measurement Accuracy 20 secs, Display Panel Single Side, Magnification 30x, Measuring Time 30 Sec, Field of View 2.6 m at 100 meters	4
12	Electronic Digital Theodolite with accessories.	Digital Theodolite - Geomax ZIPP 02, For Survey, (hz, V), Model Name/NumberZIPP 02, Brand Geo max zipp 02, Angle Measurement Accuracy (Hz, V), Colour yellow, Battery Operation charger	4
13	Handheld GPS navigator	Screen Size 3.5 Inch, Type Wireless, Usage Land Survey, Width 69 mm, Depth 30 mm	4
14	Wooden Pegs	Finish Rustic, Colour Brown, Length 2-5 Feet	6
15	Computers	Dell Optiplex 19 inch, All in One Desktop Set: Intel i5 3470, 8GB, 500GB HDD, 19 inches HD Monitor, Keyboard, Mouse, HD Webcam, Mic, Speakers, Wi-Fi, Display Port, Windows 10 Pro, MS Office	10
16	CADD software	AutoCAD LT	1

Government of Karnataka
DEPARTMENT OF COLLEGIATE AND TECHNICAL EDUCATION

Programme	Civil Engineering	**Semester**	Third Semester
Course Code	20CE33P	**Type of Course**	Programme Core
Course Name	Construction Techniques	**Contact Hours**	8 hours/week 104 hours/semester
Teaching Scheme	L:T:P :: 3:1:4	**Credits**	6
CIE Marks	60	**SEE Marks**	40

1. Rationale: Civil engineering is the oldest discipline of engineering. Since the very beginning of human existence, it has been an aspect of life. Construction is an important sector of civil engineering that contributes greatly in the economic growth of a nation. Civil engineers design, construct, supervise, operate, and maintain large construction projects and systems. It is expected that the students should know the basics of the same to apply it in the field. Through this course students will develop the desired skills and competencies which are expected from them for construction related works.

2. Course Outcomes/Skill Sets: At the end of this course students will be able to

CO-01	Select the type of building suitable for construction for a given climatic conditions and justify the reasons for such a selection.
CO-02	Identify the type of soil, test it to confirm properties and strength, recommend suitable excavation methods and type of foundations.
CO-03	Select a suitable type of superstructure, list the various components to be built and recommend the appropriate construction techniques and services to be used for a required building structure.
CO-04	Identify the reasons for deterioration of a given structure using the appropriate diagnostic methods and tools, record the levels of distress and recommend corrective action plans for repair and rehabilitation of that structure.

3. Course Content

Week	CO	PO	Lecture (Knowledge Criteria)	Tutorial (Activity Criteria)	Practice (Performance Criteria)
			3 hours/week	1 hour/week	4 hours/week (2 hours/batch twice in a week)
1	1	1,2,4	1. Climatic factors: Tropical climate, solar & wind flow pattern, Time lag & decrement factor, Periodic heat flow.	1. Study the Standard Penetration test	1. Field Identification of type of soil based

			2. Classification of soils and their suitability for the construction of different structures. Bearing capacity of soil, Safe bearing capacity of soil. 3. Determination of Bearing capacity by Standard penetration test (SPT), Method of improving the safe bearing capacity	and Plate load test. 2. Study and prepare a report on local rainfall data and type of soil strata available.	on visualization and validate the type of soil by conducting sieve analysis test - Particle size distribution using semi-log graph. 2.Test on soil: a) Liquid limit b) Plastic limit c) Shrinkage limit.
2	2	2,4,7	1. Site clearance, Process of general & deep excavation, Necessity of shoring, Soil nailing and strutting in foundation, excavation and process of dewatering, purpose of anti-termite treatment, type of chemical used & laying method. 2. Foundation: Purpose and classification of foundation. Shallow foundation: Isolated footing Spread footing, combined footing, Strap footing and Raft foundation. 3. Deep foundation: Pile foundation and its types and Caisson foundation. Selection of foundation for different types of structures.	1.List the tools and equipments used for site clearance and excavation work 2.Study and prepare a report on advanced techniques in laying foundation.	1 Tests on Moisture content of soil (Oven drying method and Field density of soil by core cutter and rapid moisture meter. 2. Conduct Standard Proctor test on soil compaction.
3	2	1,2,4,7	1. Foundation in Black Cotton Soil. Causes for failure of foundation and preventive measures. 2. Plinth beam or Plinth slab / grade beams. Superstructure-Column, Beams and their suitability for different structures. 3. Load bearing walls, non-load bearing walls & framed structure. Main attributes of masonry work, Technique used in masonry work.	1.Study the construction methodology of basement and Retaining wall. 2.Study & prepare a report on Advanced techniques in masonry work.	1. Free swell Index of Black cotton soil. 2. Water Absorption test & other field test on brick. 3. Compression test on bricks, Dimensionality tolerance test.
4	3	2,4,7	1 & 2. Types of masonry work and their suitability. Stone masonry, Brick masonry, Concrete Block masonry and their types.	1.Study & prepare a report on various Precast concrete partition walls. 2.Prepare a report on Autoclave	1. Construction of English bond & Flemish bond, also prepare a masonry checklist for

			3. Partition walls and its types based on materials. Dry wall construction Structural Glazing, Aluminium Panelling, Infill walls and Envelopes.	brick masonry, Stabilized mud block masonry, Poro Thermo Block masonry. Laterite brick masonry.	before & after construction. 2. Construct concrete block masonry wall of height 1metre.
5	3	1,2,3 ,7	1. Ventilation requirements for health mechanisms, natural ventilation, cross ventilation and artificial ventilation, Airflow patterns in building. Purpose of providing doors, windows and ventilators and its suitability. 2.Lintels, sunshades, sun breakers and canopy, portico and their suitability. 3.Arch-Terms used, Types of arches-Flat, Segmental, and Semi-circular and their suitability.	1. Study & present the Standard size of doors, windows & ventilators for different types of building as per I.S codes.	1.Study and present important types of doors, windows and ventilators in general use. 2. Prepare process manual for installation of doors, windows and ventilators.
6	3	1,2,3 ,7	1. Stairs: Technical terms, Requirements of a stair, Indian Standards for dimensions of stairs, Construction method of staircase and its headroom. 2.Elevators: Lift pit - Foundation for Lift and concrete or Block work with intermediate column beam structure around the lift and lift headroom 3.Ramps and escalators and their importance as per Indian Standards	1. Study the Suitability of staircases, ramps, elevators and escalators in different typologies of buildings	1. Study & present different types of stairs 2.Prepare process manuals for construction of staircases, ramps and lift pit.
7	3	1,3	1.Introduction to Formwork, shuttering, centring, staging, scaffolding and its applications. 2. Scaffolding: Component parts, types of scaffolding and props, Materials used for scaffoldings. 3. Types of shoring-Raking, Flying & Dead shores. Safety precautions while using scaffolding.	1. Visit the construction site and collect details of the advanced types of scaffoldings and prepare a report.	1.Prepare a checklist (before, during after the work) & process manual for different types of scaffolding. 2. Draw different types of scaffolding using BIM software (3D using

					AutoCAD, Revit, Sketch etc.)
8	3	2,3,7	1.Formwork: Purpose of providing formwork. Types of formworks based on material. 2. Requirements and Codal provisions for Standard formwork. Monolithic Construction Formwork. 3. Method of shuttering and centring & removal of formwork. Formwork Failures and Remedies.	1. Visit construction site and prepare a photo gallery of different formworks adopted for various construction activities.	1. Study and present the tools and components used for formwork. 2. Prepare a checklist & process manual for different types of form work.
9	3	1,2,5,7	1.Roof: Types of roofs, common types of Roofing materials. 2. Pitched roof, its basic components and its suitability. Flat roof-advantages and disadvantages 3. Weather proof course for flat roofs. False ceiling and its suitability.	1. Study & compare different types of roofs considering typology of building and atmospheric conditions.	1. Prepare a checklist & process manual for construction of different types of roofs & trusses. 2.Study and present the technique of laying different types of roofs & trusses.
10	3	1,2,4,7	1. Objectives of plastering and requirements of good plaster. Method of cement plastering, 2. Types of plaster and surface finishes- Smooth, sand faced, rough cast, pebble dash, debtor, scrapped, textured finish. 3. Pointing- Method of pointing & types. Fixing of doors and windows using different fixtures.	1. Study & present advanced plastering and surface finishing techniques and its suitability.	1. Visit a construction site during Plastering Activity-Prepare check list & process manual for cement plastering.

					2. Prepare checklist & process manual for Gypsum/ POP plastering.
11	3	1,2,5 ,7	1. Definition and causes of dampness. Effects of dampness and prevention of dampness. Materials used for the damp proof course. 2. Method of Terrace waterproofing, Water tank waterproofing Methods & types of expansion joint treatment. Roof slab leakages or dampness and arresting it. 3. Waterproofing technique for swimming pools, sump, podium, bathroom sunken slabs, water closets, retaining wall.	1.Study on advanced waterproofing techniques and grouting techniques. 2.Study and Collect working procedure for pressure grouting application for roof slab leakage or dampness	1. Prepare checklist & process manual for Waterproofing and laying procedure for different areas of building. 2.Types & laying procedure of grouts.
12	3	1,2,5 ,7	1.Types of floors, Suitability of flooring material, Process of laying Cement concrete floorings. 2. Process of laying Oxide flooring. Ceramic tile flooring, Vitrified flooring, granite flooring, Marble flooring. 3. Wooden flooring, Vinyl flooring, Vacuum dewatered flooring, IPF flooring, epoxy flooring, False flooring. Cladding Work and its types, Importance and suitability of cladding work	1. Collect samples and prepare a report on the grouting process for flooring works. 2. Study on advanced techniques in flooring. 3.Collect & present different types of flooring materials.	1.Prepare checklist & process manual for different types of flooring. 2.Prepare checklist & process manual for different types of cladding work.
13	4	2,3,5 ,7	1. Methods of painting, Types of paints distempering & varnishing on different surfaces. VOC paints & its importance. 2. Introduction, Cause of deterioration of concrete structures, Diagnostic methods & analysis, preliminary investigations, experimental investigations using NDT. 3.Techniques for Repair:(Corrosion) Rust eliminators and polymer coating for rebar during repair, foamed concrete,	1.Study & present advanced technique in painting. 2.Prepare a report on method of application of external texture painting works.	1. Visit a construction site during Painting activity, Prepare check list & process manual for painting on different surfaces (Any one method)

			mortar and dry pack, vacuum concrete, Gunite and Shotcrete, Epoxy injection, Mortar repair for cracks, shoring and underpinning.		2. Site visit, investigate the problem using NDT, analyse, adopt suitable method of repair & prepare check list & process manual for repair work.
Total in hours			**39**	**13**	**52**

NOTE 1: The course content shall be delivered through lectures, PowerPoint presentations, video demonstrations and field visits.

NOTE 2: The TUTORIAL (Activity criteria) shall be conducted / executed by the student (Minimum ONE suggested activity from each week) and to be submitted in portfolio evaluation of activities through rubrics to the faculty.

NOTE 3: The PRACTICE (Performance criteria) shall be conducted by the student and observations and report to be submitted at the end of each session to the faculty.

4. CIE and SEE Assessment Methodologies

Sl. No	**Assessment**	**Test Week**	**Duration** In minutes	**Max marks**	**Conversion**
1.	CIE-1 Written Test	5	80	30	Average of three tests 30
2.	CIE-2 Written Test	9	80	30	
3	CIE-3 Written Test	13	80	30	
4.	CIE-4 Skill Test-Practice	6	180	100	Average of two skill test reduced to 20
5	CIE-5 Skill Test-Practice	12	180	100	
6	CIE-6 Portfolio continuous evaluation of Tutorial sessions through Rubrics	1-13		10	10
Total CIE Marks					60
Semester End Examination (Practice)			180	100	40
Total Marks					**100**

5. Format for CIE written Test

Course Name	**Construction Techniques**	Test	I/II/III	Sem	III/IV
Course Code	**20CE33P**	Duration	80 Min	Marks	30
Note: Answer any one full question from each section. Each full question carries 10 marks.					
Section	Assessment Questions		Cognitive Levels	Course Outcome	Marks
I	1				

	2			
II	3			
	4			
III	5			
	6			
Note for the Course coordinator: Each question may have one, two or three subdivisions. Optional questions in each section carry the same weightage of marks, Cognitive level and course outcomes.				

6. Rubrics for Assessment of Activity (Qualitative Assessment)

Sl. No.	Dimension	Beginner	Intermediate	Good	Advanced	Expert	Students Score
		2	4	6	8	10	
1		Descriptor	Descriptor	Descriptor	Descriptor	Descriptor	8
2		Descriptor	Descriptor	Descriptor	Descriptor	Descriptor	6
3		Descriptor	Descriptor	Descriptor	Descriptor	Descriptor	2
4		Descriptor	Descriptor	Descriptor	Descriptor	Descriptor	2
	Average Marks= (8+6+2+2)/4=4.5						**5**

Note: Dimension and Descriptor shall be defined by the respective course coordinator as per the activities

7. Reference:

Sl. No.	Description
1	Koenigsberger, O.H. et al**, "Manual of Tropical Housing and Building Part-I Climatic Design**", Orient Longman. 1973
2	Hvorslev MJ, "**Subsurface Exploration and Sampling of Soils for Civil Engg. Purposes**" Elsevier Pub. Co,
3	Manfredd RH, "**Engineering Principles of Ground Modification"**, McGraw Hill
4	Purushotham Raj, "**Ground Improvement Techniques**".
5	Bureau of Indian Standards, "**HandBook of Functional Requirements of Buildings, (Sp-41 &Sp- 32)**", BIS 1987 and 1989.
6	B C Punmia, "**Building Construction**", Laxmi Publications
7	www.nptel.ac.in

8. a. CIE Skill Test1 Scheme of Evaluation

SL. No.	Particulars/Dimension	Marks
1	Portfolio evaluation for practice sessions -Performance criteria (Observations and report)	10
2	Test on soil. a. Field identification of soil- 05 marks. b. Conduct sieve analysis test and determine type of soil by Particle size distribution using semi-log graph / Determination of Atterberg Limits a) Liquid limit / b) Plastic limit / c) Shrinkage limit/Field density of soil by core cutter / Standard Proctor Compaction Test on soil. i. Procedure with tabular columns - 10 marks ii. Conduction of experiment - 15 marks iii. Result and Conclusion - 05 marks	35
3	Test on Bricks. a. Field test on Bricks (Any 5 test)- 05 marks. b. Compression test on bricks and Dimensionality tolerance test / Free swell Index of Black cotton soil / Construction of English bond masonry /Flemish bond masonry/Construct block masonry wall using suitable infills i. Procedure with tabular columns and check lists if any - 10 marks ii.Conduction of experiment - 15 marks iii. Result and Conclusion - 05 marks	35
4	Prepare process manual for. Doors/ Windows / Ventilators/ Staircases / Ramps / Lift pit	10
5	Viva-Voce	10
	Total Marks	**100**

8. b. CIE Skill Test 2 Scheme of Evaluation

SL. No.	Particulars/Dimension	Marks

1	Portfolio evaluation for practice sessions -Performance criteria (Observations and report)	10
2	Scaffolding: Prepare a checklist (before, during and after) Prepare process manual for form work. Draw 3D elevation of scaffolding using BIM software like AutoCAD / Revit / Sketch up/ 3D max	20
3	Formwork: Prepare a checklist (before, during and after) Prepare process manual for form work.	10
4	a. Roof construction: Prepare a checklist (before, during and after) Prepare process manual for roof construction. **OR** b. Truss Installation: Prepare a checklist (before, during and after) Prepare process manual for Truss Installation.	10
5	a. Cement plastering: Prepare a checklist (before, during and after) Prepare process manual for Cement plastering. **OR** b. Gypsum/ POP plastering: Prepare a checklist (before, during and after) Prepare process manual for Gypsum/ POP plastering.	10
6	Waterproofing and joint filler: Prepare a checklist (before, during and after) Prepare process manual for Waterproofing and joint filler work (grouting).	10
7	Flooring: Prepare a checklist (before, during and after) Prepare process manual for Floor construction.	10
8	Wall cladding: Prepare a checklist (before, during and after) Prepare process manual for Wall cladding.	10
9	Viva-Voce	10
	Total Marks	**100**

Note for the Examiner:

1. The choice between the questions 4a and 4b shall be done by the examiner.
2. The choice between the questions 5a and 5b shall be done by the examiner.

8. c. SEE Scheme of Evaluation

SL. No.	Particulars/Dimension	Marks
	a. Conduct sieve analysis test and determine type of soil by Particle size distribution using semi-log graph / Determination of Atterberg Limits a) Liquid limit / b) Plastic limit / c) Shrinkage limit/Field density of soil by core cutter / Standard Proctor Compaction Test on soil. i. Procedure with tabular columns - 10 marks	

1	ii. Conduction of experiment - 15 marks iii. Result and Conclusion - 10 marks **OR** b. Compression test on bricks and Dimensionality tolerance test / Free swell Index of Black cotton soil / Construction of English bond masonry /Flemish bond masonry/Construct block masonry wall using suitable infills i. Procedure with tabular columns and check lists if any - 10 marks ii. Conduction of experiment - 15 marks iii. Result and Conclusion - 10 marks	35
2	a. Draw 3D elevation of scaffolding using BIM software like AutoCAD / Revit / Sketch up/ 3D max. Prepare a checklist (before, after and during) and process manual for repair work. **OR** b. Investigate the problem using NDT, analyse and adopt a suitable method of repair. Prepare a checklist & process manual for repair work.	25
3	Prepare **process manual** and **checklists** for any **TWO** of the following construction activities. a. Earthwork Excavation b. Foundation / Footing and column c. SSM d. BBM e. Formwork f. Roof construction g. Truss Installation h. Cement plastering i. Gypsum/ POP plastering j. Waterproofing and joint filler k. Flooring l. Wall cladding	20
4	Viva-Voce	20
	Total Marks	**100**

Note for the External Examiner:

1. The choice between the questions 1a and 1b shall be done by the external examiner.
2. The choice between the questions 2a and 2b shall be done by the external examiner.

9. Equipment/software list with Specification for a batch of 20 students

Sl. No.	**Particulars**	**Specification**	**Quantity**

1.	IS Sieve 20 mm , 10 mm 4.75 mm , 2.00 mm , 1.18 mm , 600 µm, 425 µm , 300 µm, 212 mm , 150 µm , 75 µm , Pan	IS sieve for soil testing	1 set
2.	Measuring Jars of 1000, 500, 100, 10ml	Plastic measuring JAR	1set
3	Digital weighing Balance 12 kg capacity with minimum 1 gm. accuracy	0.5gm accuracy	1no
4	Hot air Oven	Stainless Steel Member Lab Oven	1no
5	Core cutter with dolly	Soil Testing Machine	1set
6	Standard proctor compaction apparatus	Cylindrical Metal Mold, having internal diameter 4" or 6", the internal height of 4.6"and the mold should have detachable base plate & collar of 2 inches (5.08 cm), Rammer, weighing 5.5 lbs (2.5 kg) & having fall of 12 inches (30.5 cm), with a flat circular face of 2" diameter.	1set
7	Atterberg limits apparatus	Soil testing apparatus	1set
8	Ultrasonic pulse velocity kit	oscillation frequency in range of 40 kHz to 50 kHz	1set
9	Rebound Hammer	Measuring range from 10 to 130 N/mm2	1no
10	Non-Destructive Half-Cell Potentiometer Testing on Concrete	As per ASTM C 876-91.	1set
11	Portable core drilling machine	350mm core cutting machine	1set
12	A complete assembly of point load tests.	capacity of the loading machine is usually 25kN or 50kN and typically utilizes a hydraulic pressure gauge	1set

13	AutoCAD	Ver. 2020 and above	1license/college
14	Sketch up/3Ds Max/Revit	Ver. 2018 and above	1license/college
15	Pick Axe	For digging soil	4nos
16	Spirit level	1mtr length	2nos
17	Trowel	Big	3nos
18	Trowel	Medium	3nos
19	Trowel	Small	3nos
20	Oil can	250ml (for pouring water)	5nos
21	Right angle 1*1.5m	1*1.5m	1no
22	Measuring tape	metal tape 3mtr	5nos
23	Safety goggle	Engineer's safety goggle	4nos
24	Wheelbarrow	Small	1no
25	Portable Air blower	Hand blower type power 600w	1no

Government of Karnataka

DEPARTMENT OF COLLEGIATE AND TECHNICAL EDUCATION

Programme	Civil Engineering	**Semester**	III
Course Code	20CE34P	**Type of Course**	Programme Core
Course Name	Building Drawing using CADD	**Contact Hours**	8 hours/week 104 hours/semester
Teaching Scheme	L:T:P :: 3:1:4	**Credits**	6
CIE Marks	60	**SEE Marks**	40

1. Rationale: Drawing is the language of Civil Engineers. Drawing is fundamentally the pictorial and written form of representation of any construction including every bit of detail such as wall colour, furniture, floor space, material details, outlets, lighting, equipment etc. Drawings are important because they are used to communicate the technical details of a project in a common format. It is used as a final drawing on the basis of which engineers proceed to further development. It is expected the students should know the basics of the same to apply it in the field. Through this course students will develop the desired skills and competencies which are expected from them for drawing related works.

2. **Course Outcomes/Skill Sets:** At the end of the semester student will be able to:

CO-01	Prepare a site plan by using concepts of building planning, climatic parameters and building bye laws applicable to that type of building for a given location.
CO-02	Prepare a single line diagram, building drawing including plan, elevation and section for a given type of building for a given location.
CO-03	Prepare plumbing drawing using standard symbols and legends along with recommending the location, type of pipe material, fittings and fixtures for a given building.
CO-04	Prepare electrical drawing and fire fighting layout appropriate for a given building.

1. Course Content

Week	CO	PO	Lecture (Knowledge Criteria)	Tutorial (Activity Criteria)	Practice (Performance Criteria)
			3 hours/week	1 hour/week	4 hours/week (2 hours/batch twice in a week)

1	1	1,4, 5,7	1.Building Bye Laws: Introduction, objects, Importance and Important terms used in building bye laws 2.Function of Local Authority, Responsibility of owner, Applicability and Principles underlying building bye laws, Setbacks or building line, light plane, Floor Space Index 3.Building bye laws to be practiced: Off street Parking, Fire Protection, Minimum Plot sizes, Thickness of walls, Plinth, Cellar, Height of floors, Stairs, Lifts, Lobbies and Corridors, Sanitary accommodation	1.Study and compare the building bye laws for different typologies of buildings and location of building	1.Symbols and sign conventions used in building drawings as per IS standards 2.Introduction to basic BIM softwares like AutoCAD, ARCHICAD, REVIT ARCHITECTURE, 3DSMAX, SKETCHUP
2	1	1,4, 5,7	1.Building bye laws to be practiced: Fenestration, Ventilation, Sills of openings, Staircases, Ramps, Roofs, Parapets and Terraces, Water tank, Refuse area/ Disposal of Solid waste, Discharge of Rainwater, Provision of Letter box. 2. Margin and Maximum Built up area, Plinth areas, for different types of buildings, Permissible Built-up area in margins, Projections in margins, Margins from Common plot, Open spaces, floor area ratio, carpet area key plan (layout plan), Site plan, building plan, working plan. 3. Building Planning- Factors, Shape, size and topography of site, Climatic conditions of the site, Safety precautions to be followed at site during building construction as per National Building Code (NBC).	1.Practice drawing of Site plan with setbacks and orientations for different dimensions. 2.Study the elements of Sustainable Planning as per NBC 2016.	1.Drawing of site plan showing setbacks for residential building using CADD software. 2.Mark the site plan on the field giving setbacks.
3	2	1,4, 7	Given the floor area or carpet areas of rooms, plan the building and draw a Single line diagram of the building. 1. Residential building 2. Commercial Buildings 3. Industrial Building.	1.Prepare Manual Drawing of Single line diagrams for different typology of buildings. Considering building bye laws	1.Execute the single line diagram using CADD software. 2.Mark the single line diagram and foundation layout for load bearing and Framed structures on the field using centre line marking method.
4	2	1,4, 7	1. Given the floor area or carpet areas of rooms, plan the building and draw a Single line diagram of the building. 1. Residential building 2. Commercial Buildings 3. Industrial Building	1.Prepare Manual Drawing of Single line diagrams for different typology of buildings	1.Execute the single line diagram using CADD software. 2.Mark the single line diagram and footing layout for load bearing and Framed structures

				considering building bye laws.	on the field using centre line marking method.
5	2	1,4, 7	Draw the following views for Residential buildings 1. Plan 2. Elevation 3. Section	1.Create 3-D model of residential buildings using software's like ARCHICAD, REVIT ARCHITECTURE, SKETCH UP, 3DS MAX	1.Execute the building drawing (Plan, Elevation and section) using CADD software for residential building 2.Preparation of Footing layout and Centre line/ grid line marking of residential building on the field
6	2	1,4, 7	Draw the following views for Commercial Buildings 1. Plan 2. Elevation 3. Section	1.Create 3-D model of commercial buildings using software's like ARCHICAD, REVIT ARCHITECTURE, SKETCH UP, 3DS MAX.	1.Execute the building drawing (Plan, Elevation and section) using CADD software for commercial building. 2.Preparation of Footing layout and Centre line/ grid line marking of commercial building on the field.
7	2	1,4, 7	Draw the following views for Industrial Building having pitched roof. 1. Plan 2. Elevation 3. Section	1.Create 3-D model of industrial buildings using software's like ARCHICAD, REVIT ARCHITECTURE, SKETCH UP, 3DS MAX.	1. Execute the building drawing (Plan, Elevation and section) using CADD software for industrial building 2.Preparation of Footing layout and Centre line/ grid line of industrial building on the field
8	3	1,4, 7	1. Introduction to plumbing: Pipe Materials used in building construction works for water supply work - Plastic Pipes, High Density Polyethylene Pipes, Densified cast iron pipes, GI pipes, Stoneware pipes, Asbestos Cement pipes, and Concrete pipes, Hot water pipes with insulation. 2.Water supply fittings, their description and uses, water main, service pipes, supply pipe,	1.Conduct Market analysis on water supply fittings, fixtures, accessories, tools and equipment	1. Signs, Symbols and conventions of Water supply fittings and fixtures used for building service drawing. 2. Demonstrate the water supply fittings,

			distribution pipe, domestic storage tank, stop cock, ferrule, gooseneck, water tap, aerators, water meter. 3. Merits and Demerits. Connections from water main to buildings. Factors affecting the suitability of plumbing material and accessories for Water supply work, Water pressure test for leakage during installation of pipes.	and prepare report.	fixtures, accessories, tools and equipment.
9	3	1,4, 7	1. Importance of Sanitary work for building. Different types of Sanitary pipes and pipe materials used in building construction works for drainage and waste disposal. 2. Sanitary Fittings- Water Closets, Flushing Cisterns, Urinals, Inspection Chambers, Traps, Anti-syphonage. Connections from building to sewer main. 3. Inspection, Testing and Maintenance of sanitary line in building. Factors affecting the suitability of sanitary material and accessories for Sanitary work.	1.Conduct Market analysis on Sanitary fittings, fixtures, accessories, tools and equipment and present a report.	1.Signs, symbols and conventions of Sanitary fittings and fixtures in building service drawing. 2.Demonstrate the Sanitary fittings, fixtures, accessories, tools and equipment.
10	3,4	1,4, 7	1.Wiring accessories: SP (single pole switch), DP (double pole switch), ICDP (Iron Clad Double Pole main switch), ICTP (Iron Clad Triple Pole switch), change over switch, modular switches, 2 pin socket ,3 pin socket, 2 pin plug top, 3 pin plug top, ceiling rose, round block, switch boards, switch plates, modular switch enclosures, blank insert gang box, junction box, fan box. 2. Safety devices: Types of fuse units and Materials for fuse wire, Glass cartridge fuse, types of HRC fuse, Kit kat fuse. Types of MCB, MCCB, RCCB, ELCB Types of Earthing- Pipe earthing, Plate earthing, Lightning arrestors. 3.Types of wiring systems and their applications: Surface conduit, concealed conduit, PVC casing capping. Types of wires, cables used for different current and voltage rating, Connection from Electric source to building based on electricity load.	1.Conduct Market analysis on Electrical wiring, fittings, fixtures, accessories, tools and equipment and present a report. 2.Study on energy saving using Solar Panel installations with accessories in buildings.	1. Signs, symbols and conventions of Electrical wiring, fittings and fixtures in building service drawing. 2.Conduct field visit to study plumbing and electrical installations in ongoing building constructions.
11	3,4	1,4, 7	Building Basic Services 1. Preparation of water supply Layout for residential building. 2. Preparation of Sanitary Layout for residential building.	1.Prepare basic service layouts like Water	1&2. Prepare basic service layouts like Water supply, Sanitary, Electrical layouts for

			3. Preparation of Electrical Layout for residential building.	supply, Sanitary, Electrical layout for your college building using any Application software and demonstrate.	residential building using AUTOCAD with layers.
12	3,4	1,4, 7	1 Fire classifications, Importance of providing Fire fighting system and fire safety requirements in Commercial and Industrial Building. 2.Components of the fire fighting system and its applications in Commercial and Industrial Building. 3. Location of fire fighting system, installations and Code of Practice for fire safety in different typologies of Buildings. Fire ratings.	1.Conduct Field visit and study the firefighting system installations, fire safety measures and demonstrate.	1 & 2 Prepare basic service layouts like Water supply, Sanitary, Electrical and Fire fighting system layouts for Multi-storeyed building using AUTOCAD using layers.
13	3,4	1,4, 7	1. Importance of conservation of rain water by Rain water harvesting unit in buildings. Components of the rainwater harvesting system. 2.Methods of Rainwater harvesting, Benefits of rainwater harvesting unit in buildings 3. Purpose of using Soak pit with Septic tank and Manhole and its sizing based on the requirement for different typologies of building.	1.Prepare Rain water harvesting unit layout for your college building using any Application software and demonstrate.	1. Prepare rainwater harvesting unit layout for residential building drawings in CADD 2. Execute septic tank with soak pit and manhole drawings for building drawings in CADD
Total in hours			**39**	**13**	**52**

NOTE 1: The course content shall be delivered through lectures, PowerPoint presentations, video demonstrations and field visits.

NOTE 2: The TUTORIAL (Activity criteria) shall be conducted / executed by the student (Minimum ONE suggested activity from each week) and to be submitted in portfolio evaluation of activities through rubrics to the faculty.

NOTE 3: The PRACTICE (Performance criteria) shall be conducted by the student and observations and report to be submitted at the end of each session to the faculty.

4. CIE and SEE Assessment Methodologies

Sl. No	Assessment	Test Week	Duration In minutes	Max marks	Conversion
1.	CIE-1 Written Test	5	80	30	Average of three tests 30
2.	CIE-2 Written Test	9	80	30	
3	CIE-3 Written Test	13	80	30	
4.	CIE-4 Skill Test-Practice	6	180	100	Average of two skill test reduced to 20
5	CIE-5 Skill Test-Practice	12	180	100	
6	CIE-6 Portfolio continuous evaluation of Tutorial sessions through Rubrics	1-13		10	10
Total CIE Marks					60
Semester End Examination (Practice)			180	100	40
Total Marks					**100**

5. Format for CIE written Test

Course Name	BUILDING DRAWING USING CADD	Test	I/II/III	Sem	III/IV
Course Code	20CE34P	Duration	80 Min	Marks	30
Note: Answer any one full question from each section. Each full question carries 10 marks.					

Section	Assessment Questions	Cognitive Levels	Course Outcome	Marks
I	1			
	2			
II	3			
	4			
III	5			
	6			
Note for the Course coordinator: Each question may have one, two or three subdivisions. Optional questions in each section carry the same weightage of marks, Cognitive level and course outcomes.				

6. Rubrics for Assessment of Activity (Qualitative Assessment)

Sl. No.	Dimension	Beginner	Intermediate	Good	Advanced	Expert	Students Score
		2	4	6	8	10	
1		Descriptor	Descriptor	Descriptor	Descriptor	Descriptor	8
2		Descriptor	Descriptor	Descriptor	Descriptor	Descriptor	6
3		Descriptor	Descriptor	Descriptor	Descriptor	Descriptor	2

4		Descriptor	Descriptor	Descriptor	Descriptor	Descriptor	2
	Average Marks= (8+6+2+2)/4=4.5						5

Note: Dimension and Descriptor shall be defined by the respective course coordinator as per the activities

7. Reference:

Sl. No.	Description
1	Building Planning and Drawing- **S.S. Bhavikatti, M.V. Chitawadagi,** I. K International Publishing House Pvt.Ltd
2	Civil Engineering Drawing and design – **D.N. Ghose (CBS Publishers)**
3	A textbook of Draughtsman Civil (Theory and Practical) – **R.S. Mallik and G.S. Meo(Asian publishers, New Delhi)**
4	CAD in Civil Engineering a Laboratory Referral- **Dr M.A. Jayaram, D.S.Rajendra Prasad, Sapna Book House**
5	Making a simple floor plan using AUTOCAD https://www.youtube.com/watch?v=hO865EIE0p0&t=384s

8. a. CIE Skill Test 1 - Scheme of Evaluation

SL. No.	Particulars/Dimension	Marks
1	Portfolio evaluation for practice sessions -Performance criteria (Observations and report)	10
2	Skill of using CADD commands	10
3	Preparation of 2D Building drawings (Residential/ commercial/industrial) using CADD Plan - 20 marks Elevation - 10 marks Section - 20 marks	50
4	Dimensioning and Detailing of the given drawing	20
5	Viva-Voce	10
	Total Marks	100

8. b. CIE Skill Test 2 - SEE Scheme of Evaluation

SL. No.	Particulars/Dimension	Marks
1	Portfolio evaluation for practice sessions -Performance criteria (Observations and report)	10
2	Skill of using CADD commands	10
3	a) Preparation of service layout for the 2D building PLAN - 20 marks b) (i) Water supply layout - 15 marks **OR** (ii) Sanitary layout - 15 marks c) (i) Electrical layout - 15 marks **OR** (ii)Fire fighting layout - 15 marks	50
4	Dimensioning and Detailing of the drawing -10 Tabulation of Symbols and sign conventions-10	20
5	Viva-Voce	10
	Total Marks	100

Note for the Examiner:

1. The choice between the questions 3b and 3c shall be done by the examiner.

8. c. SEE - Scheme of Evaluation

SL. No.	Particulars/Dimension	Marks
1	Preparation of 2D Building drawings (Residential/ commercial/industrial) using CADD and Dimensioning and Detailing of the given drawing (Single line diagram). Plan - 20 marks Elevation - 10 marks Section - 20 marks	50
2	a) Preparation of service layout for the 2D building PLAN drawn in SI.NO. 1 b) (i) Water supply layout - 15 marks **OR** (ii) Sanitary layout - 15 marks c) (i) Electrical layout - 15 marks **OR**	30

	(ii)Firefighting layout - 15 marks	
3	Viva-Voce	20
	Total Marks	100

Note for the External Examiner:

1. The choice between the questions 2b and 2c shall be done by the external examiner.

9. Equipment/software list with Specification for a batch of 20 students

Sl. No.	**Particulars**	**Specification**	**Quantity**
1	Computers with Latest Configuration	8 GB RAM, 512GB HARD DRIVE, i5 and above 2.5 GHz PROCESSOR	1/ student
2.	Any latest licensed Computer Aided Drafting Software	Ver.2020	1/ computer
3	Building Information Modelling softwares- ARCHICAD / REVIT ARCHITECTURE / 3DSMAX / SKETCHUP	Ver.2010 & above	1/ computer
4	Plotter of size A0	24 INCH LARGE FORMAT, THERMAL INKJET PLOTTER	1
5	LCD Projector	1800 Lumen | Large 120-inch Display Projection with HDMI + VGA + Aux + USB Connectivity	1
6	Power Backup	BATTERY + INVERTER	1
7	Stylus for drawing	Pen Deco01 V2 Digital Graphics Drawing Pen Tablet (10" x 6.25", 8192 Levels of Pressure Sensitivity, Battery-Free Passive Stylus	
8	Construction practice tool kit, Pegs, thread, trisquare, arrows, plumbing tool kit		5 set

ಮೂರನೇ ಸೆಮಿಸ್ಟರ್

ಕನ್ನಡ ಬಲ್ಲ ಡಿಪ್ಲೋಮಾ ವಿದ್ಯಾರ್ಥಿಗಳಿಗೆ ನಿಗದಿಪಡಿಸಿದ ಪಠ್ಯಕ್ರಮ

(ಕನ್ನಡ ಭಾಷೆ, ಸಾಹಿತ್ಯ, ಸಂಸ್ಕೃತಿ ಮತ್ತು ಪರಂಪರೆ ಕುರಿತು)

Course Code	20KA31T	Semester : III	Course Group - AU
Course Title	**ಸಾಹಿತ್ಯ ಸಿಂಚನ – 2**	Category : Audit	Lecture Course
No. of Credits	2	Type of Course	CIE Marks : 50
Total Contact Hours	02 Hrs Per Week 26 Hrs Per Semester	Prerequisites Teaching Scheme (L:T:P)= 2:0:0	SEE Marks : Nil

ಸಾಹಿತ್ಯ ಸಿಂಚನ – 2 ಪಠ್ಯಕ್ರಮ - 20KA31T

26 ಗಂಟೆಗಳು

ಪಠ್ಯಕ್ರಮದ ಪರಿವಿಡಿ	**ಬೋಧನಾ ಅವಧಿ**
1. ಹೊಸಗನ್ನಡ ಸಾಹಿತ್ಯ ಚರಿತ್ರೆಯ ಪ್ರಭಾವಗಳು ಮತ್ತು ಪ್ರೇರಣೆಗಳು	**01 ಗಂಟೆ**
2. ಹೊಸಗನ್ನಡ ಕಾವ್ಯದ ಪ್ರಕಾರಗಳು -	**02 ಗಂಟೆ**
• ನವೋದಯ ಸಾಹಿತ್ಯ - ಲಕ್ಷಣಗಳು ಮತ್ತು ಪ್ರೇರಣೆ, ಪ್ರಮುಖ ಕವಿಗಳು ಮತ್ತು ಸಾಹಿತ್ಯದ ಕೊಡುಗೆಗಳು. • ನವ್ಯ ಸಾಹಿತ್ಯ - ಲಕ್ಷಣಗಳು ಮತ್ತು ಪ್ರೇರಣೆ, ಪ್ರಮುಖ ಕವಿಗಳು ಮತ್ತು ಸಾಹಿತ್ಯದ ಕೊಡುಗೆಗಳು. • ಬಂಡಾಯ ಮತ್ತು ಪ್ರಗತಿಪರ ಸಾಹಿತ್ಯ - ಲಕ್ಷಣಗಳು ಮತ್ತು ಪ್ರೇರಣೆ, ಪ್ರಮುಖ ಕವಿಗಳು ಮತ್ತು ಸಾಹಿತ್ಯದ ಕೊಡುಗೆಗಳು. • ದಲಿತ ಸಾಹಿತ್ಯ, ಮಹಿಳಾ ಸಾಹಿತ್ಯ, ವಿಜ್ಞಾನ ಸಾಹಿತ್ಯ ಮತ್ತು ಇತ್ತೀಚಿನ ಪ್ರಚಲಿತ ಕನ್ನಡ ಸಾಹಿತ್ಯ - ಲಕ್ಷಣಗಳು ಮತ್ತು ಪ್ರೇರಣೆ, ಪ್ರಮುಖ ಕವಿಗಳು ಮತ್ತು ಸಾಹಿತ್ಯದ ಕೊಡುಗೆಗಳು.	**03 ಗಂಟೆ** **03 ಗಂಟೆ** **03 ಗಂಟೆ** **03 ಗಂಟೆ**
3. ವೈಚಾರಿಕತೆ ಕುರಿತಾದ ಲೇಖನ - **ಜಿ ಎಸ್. ಶಿವರುದ್ರಪ್ಪ**	**01 ಗಂಟೆ**
4. ಕಥೆ - **ನೇಮಿಚಂದ್ರ**	**01 ಗಂಟೆ**
5. ಪ್ರವಾಸ ಕಥನ - **ಹಿ.ಚಿ.ಬೋರಲಿಂಗಯ್ಯ**ರವರ (ಕುಪ್ಪಳ್ಳಿ ಡೈರಿ ಪುಸ್ತಕದಿಂದ)	**01 ಗಂಟೆ**
6. ಪರಿಸರ, ವಿಜ್ಞಾನ ಮತ್ತು ತಂತ್ರಜ್ಞಾನ ಕುರಿತಾದ ಲೇಖನಗಳು	**01 ಗಂಟೆ**
7. ಪ್ರಬಂಧ - **ಗೊರೂರು ರಾಮಸ್ವಾಮಿ ಅಯ್ಯಂಗಾರ**	**01 ಗಂಟೆ**
8. ಪ್ರಚಲಿತ ವಿದ್ಯಮಾನಕ್ಕೆ ಸಂಬಂಧಿಸಿದ ಲೇಖನ - "ಪೇರು ಮಾರುಕಟ್ಟೆ ಮತ್ತು ಹಣಕಾಸು ನಿರ್ವಹಣೆ" ಕುರಿತಂತೆ	**01 ಗಂಟೆ**
9. ಕರ್ನಾಟಕ ಏಕೀಕರಣ ಚಳುವಳಿ - **ಪ್ರೊ. ಜಿ. ವೆಂಕಟಸುಬ್ಬಯ್ಯ**	**01 ಗಂಟೆ**
10. ಕನ್ನಡ ಸಿನಿಮಾರಂಗ ಬೆಳೆದು ಬಂದ ದಾರಿ ಮತ್ತು ನಾಡು-ನುಡಿ ಹಾಗೂ ನಾಡಿನ ಸಂಸ್ಕೃತಿಯ ಮೇಲೆ ಬೀರಿದ ಪ್ರಭಾವಗಳು	**01 ಗಂಟೆ**
11. ಕನ್ನಡದ ಸಾಮಾಜಿಕ ಉಪಭಾಷೆಗಳು (ಭಾಷಾ ಪ್ರಭೇದಗಳು)	**01 ಗಂಟೆ**
12. ಆಧುನಿಕ ಕನ್ನಡ ಸಾಹಿತ್ಯ ಚರಿತ್ರೆಯ ಒಂದು ಅವಲೋಕನ	**02 ಗಂಟೆ**
ಒಟ್ಟು ಬೋಧನಾ ಅವಧಿ 26 ಗಂಟೆಗಳು	**26 ಗಂಟೆ**

ಕನ್ನಡ ಬಾರದ / ಕನ್ನಡೇತರ ಡಿಪ್ಲೋಮಾ ವಿದ್ಯಾರ್ಥಿಗಳಿಗೆ ಕನ್ನಡ ಕಲಿಸಲು ನಿಗದಿಪಡಿಸಿದ ಪಠ್ಯಕ್ರಮ

Course Code	20KA31T	Semester : III	Course Group - AU
Course Title	**ಬಳಕೆ ಕನ್ನಡ – 2**	Category : Audit	Lecture Course
No. of Credits	2	Type of Course	CIE Marks : 50
Total Contact Hours	2 Hrs Per Week 26Hrs Per Semester	Prerequisites Teaching Scheme (L:T:P)= 2:0:0	SEE Marks : Nil

ಬಳಕೆ ಕನ್ನಡ – 2 ಪಠ್ಯಕ್ರಮ - 20KA31T

Table of Contents (ಪರಿವಿಡಿ) **26 ಗಂಟೆಗಳು**

ಸಾಹಿತ್ಯ ಸಿಂಚನ ಭಾಗ - II ಮತ್ತು **ಬಳಕೆ ಕನ್ನಡ ಭಾಗ - II** ಈ ಎರಡು ಪಠ್ಯಕ್ರಮಗಳಿಗೆ
CIE - ನಿರಂತರ ಆಂತರಿಕ ಮೌಲ್ಯಮಾಪನದ ಮಾರ್ಗಸೂಚಿಗಳು :

(Course Assessment and Evaluation Chart - CIE only)

Sl. No	Assessment	Type	Time frame in semester	Duration In minutes	Max marks	Conversion
1.	**CIE- Assessment - 1**	Written Test - 1	At the end of 3rd week	80	30	**Average of three written tests : 1, 2 & 3 for 30 Marks**
2.	**CIE- Assessment - 2**	Written Test - 2	At the end of 7th week	80	30	
3	**CIE- Assessment - 3**	Written Test - 3	At the end of 13th week	80	30	
4.	**CIE- Assessment - 4**	MCQ/Quiz	At the end of 5th week	60	20	**Average of three Assessment tests : 4, 5 & 6 for 20 Marks**
5	**CIE- Assessment - 5**	Open Book Test	At the end of 9th week	60	20	
6	**CIE- Assessment - 6**	Work book Consolidation & Activities	At the end of 11th week	60 (Work book Submission)	20	
Total CIE – Continuous Internal Evaluation Assessment Marks						50
Total Marks						50

ಸೂಚನೆ : 1.CIE - ನಿರಂತರ ಆಂತರಿಕ ಮೌಲ್ಯಮಾಪನದ 1, 2 ಮತ್ತು 3 ರ ಕಿರು ಪರೀಕ್ಷೆಗಳನ್ನು ಮತ್ತು ಮೌಲ್ಯಮಾಪನದ 4, 5 ಮತ್ತು 6 ರ ಪರೀಕ್ಷೆಗಳನ್ನು ಪ್ರತ್ಯೇಕ ಬ್ಲೂಬುಕ್ ಪುಸ್ತಕದಲ್ಲಿ ವಿದ್ಯಾರ್ಥಿಗಳು ಬರೆಯಬೇಕು.

2.ಸೆಮಿಸ್ಟರ್ ಅಂತ್ಯದಲ್ಲಿ ವಿದ್ಯಾರ್ಥಿಗಳು, ತರಗತಿ ಕನ್ನಡ ಭಾಷಾ ಶಿಕ್ಷಕರಿಂದ ಮತ್ತು ವಿಭಾಗಾಧಿಕಾರಿ ಗಳಿಂದ ದೃಢೀಕರಣಗೊಂಡ ಕಾರ್ಯಪಠ್ಯಪುಸ್ತಕವನ್ನು (Work Book) ಮೌಲ್ಯಮಾಪನ ಭಾಗ-**CIE- Assessment – 6** ರ ಪರೀಕ್ಷೆಯ ನಂತರ ಆಯಾ ವಿಭಾಗಕ್ಕೆ ಸಲ್ಲಿಸಬೇಕು.