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RV College of Engineering ®

Autonomous
Institution Affiliated
to Visvesvaraya
Technological
University, Belagavi

Approved by AICTE,
New Delhi

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Scheme & Syllabus of

III & IV Semesters (2021 Scheme)

(AS PER NEP-2020 GUIDELINES)

BACHELOR OF ENGINEERING (B.E)
IN

CIVIL ENGINEERING

(ACADEMIC YEAR 2022-2023)

ABBREVIATIONS

Sl. No.	Abbreviation	Meaning
1.	VTU	Visvesvaraya Technological University
2.	BS	Basic Sciences
3.	CIE	Continuous Internal Evaluation
4.	SEE	Semester End Examination
5.	PE	Professional Core Elective
6.	GE	Global Elective
7.	HSS	Humanities and Social Sciences
8.	PY	Physics
9.	CY	Chemistry
10.	MA	Mathematics
11.	AS	Aerospace Engineering
12.	AI & ML	Artificial Intelligence & Machine Learning
13.	BT	Biotechnology
14.	CH	Chemical Engineering
15.	CS	Computer Science & Engineering
16.	CV	Civil Engineering
17.	EC	Electronics & Communication Engineering
18.	EE	Electrical & Electronics Engineering
19.	EI	Electronics & Instrumentation Engineering
20.	ET	Electronics & Telecommunication Engineering
21.	IM	Industrial Engineering & Management
22.	IS	Information Science & Engineering
23.	ME	Mechanical Engineering
24.	AEC	Ability Enhancement Courses

INDEX

Bachelor of Engineering in
CIVIL ENGINEERING

III SEMESTER

Sl. No.	Course Code	Course Title	Credit Allocation				BoS	Category	CIE Duration (H)	Max Marks CIE		SEE Duration (H)	Max Marks SEE	
			L	T	P	Total				Theory	Lab		Theory	Lab
1	21MA31C*	Integral Transforms, Optimization and Numerical Techniques	3	1	0	**4**	MA	Theory	1.5	**100**	****	**3**	**100**	****
2	21BT32	Environmental Technology	2	0	0	**2**	BT	Theory	1	**50**	****	**2**	**50**	****
3	21CV33	Mechanics of Materials	3	0	1	**4**	CV	Theory+Lab	1.5	**100**	**50**	**3**	**100**	**50**
4	21CV34	Surveying	2	0	2	**4**	CV	Theory+Lab	1	**50**	**50**	**3**	**50**	**50**
5	21CV35	Concrete Technology	3	0	1	**4**	CV	Theory+Lab	1.5	**100**	**50**	**3**	**100**	**50**
6	21CV36	Python Programming	2	0	0	**2**	CV	Theory	1.5	**50**	****	**2**	**50**	****
7	21DMA37	Bridge Course: Mathematics	2(A)	0	0	**AUDIT**	MA	Theory	1.5	**50**	****	****	****	****
8	21CV39	Design Thinking Lab	0	0	2	**2**	CV	Lab	1	****	**50**	**2**	****	**50**
9	21CVI310	Summer Internship- I	0	0	1	**1**	CV	Internship	1	****	**50**	**2**	****	**50**
						23								

* Summer Internship-1 will be done after the II sem for 03 Weeks

*ENGINEERING MATHEMATICS – III			
Sl.No	**COURSE TITLE**	**COURSE CODE**	**BRANCHES**
1	Linear algebra, Integral transforms and Number theory for CS & IS	21MA31A	CS and IS
2	Linear algebra, Integral transforms and Fourier series for AS, EC, EE, EI & ET	21MA31B	AS, EC, EE, EI, ET
3	Integral transforms, Optimization and Numerical Techniques for BT, CH, CV, IM & ME	21MA31C	BT, CH, CV, IM, ME
4	Mathematics for AI & ML	21MA31D	AI and ML
**** MANDATORY COURSES**			
Sl.No	**COURSE TITLE**	**COURSE CODE**	**BRANCHES**
1	Environmental Technology	21BT32A	All circuit Branches
2	Biology for Engineers	21BT32B	BT & AS
3	Engineering Materials	21ME32	ME, CH & AS
***** Bridge Course: Audit course for lateral entry diploma students** (Only CIE and NO SEE)			
Sl.No	**COURSE TITLE**	**COURSE CODE**	**BRANCHES**
1	Bridge Course Mathematics	21DMA37	AS,BT,CH,CV,EC,EE,EI, IM,ME&TE
2	Bridge Course C Programming	21DCS37	CS,IS & AI

Bachelor of Engineering in
CIVIL ENGINEERING

IV SEMESTER

Sl. No.	Course Code	Course Title	Credit Allocation				BoS	Category	CIE Duration (H)	Max Marks CIE		SEE Duration (H)	Max Marks SEE	
			L	T	P	Total				Theory	Lab		Theory	Lab
1	21MA41*	Statistics and Probability for Data Science	2	1	0	**3**	MA	Theory	1.5	**100**	****	**3**	**100**	****
2	21CV42 **	Civil Engineering Materials	2	0	0	**2**	CV	Theory	1	**50**	****	**2**	**50**	****
3	21CV43	Mechanics of Fluids	3	0	1	**4**	CV	Theory+Lab	1.5	**100**	**50**	**3**	**100**	**50**
4	21CV44	Building Planning & Drawing	3	0	1	**4**	CV	Theory+Lab	1.5	**100**	**50**	**3**	**100**	**50**
5	21CV45	Structural analysis	3	1	0	**4**	CV	Theory	1.5	**100**	****	**3**	**100**	****
6	21CV4AX	Professional Core Elective – **Group A**	2	0	0	**2**	CV	MOOC	1.5	**50**	****	**2**	**50**	****
7	21HS46A / 21HS46V	Kannada Course: AADALITHA KANNADA / VYAVAHARIKA KANNADA	1	0	0	**1**	HSS	Theory	1	**50**	****	**2**	**50**	****
	21HSAE46A /B/C/D/E ***	Ability Enhancement course	0	0	1	**1**	HSS	Lab	1	****	**50**	**2**	****	**50**
8	21DCS47	Bridge Course: C Programming	2 (A)	1	0	**AUDIT**	CS	Theory	1.5	**50**	****	****	****	****
9	21HSU48	Universal Human Values and Professional Ethics	2	0	0	**2**	HSS	Theory	1	**50**	****	**2**	**50**	****
						23								

*ENGINEERING MATHEMATICS – IV			
Sl.No	**COURSE TITLE**	**COURSE CODE**	**BRANCHES**
1	Statistics and probability for Data Science	21MA41	CS, IS &AI
** MANDATORY COURSES			
Sl.No	**COURSE TITLE**	**COURSE CODE**	**BRANCHES**
1	Materials for Electronics Engineering	21EC42	EC,EE,EI,TE
2	Environmental Technology	21BT42A	AS, CH, IM, ME
3	Civil Engineering Materials	21CV42	CV
4	Bio inspired Engineering	21BT42B	AI, BT, CS, IS
*** Bridge Course: Audit course for lateral entry diploma students			
Sl.No	**COURSE TITLE**	**COURSE CODE**	**BRANCHES**
1	Bridge Course Mathematics	21DMA48	CS,IS & AI
2	Bridge Course C Programming	21DCS48	AS,BT,CH,CV,EC,EE, EI,IM,ME & TE

GROUP A: PROFESSIONAL ELECTIVES (MOOC COURSES)			
Sl. No.	**Course Code**	**Course Title**	**Duration**
1.	21CV4A1	Digital Land Surveying And Mapping (DLS&M)	8 Weeks
2.	21CV4A2	Construction Methods And Equipment Management	8 Weeks
3.	21CV4A3	Safety in Construction	8 Weeks
4.	21CV4A4	Infrastructure Economics	8 Weeks
5.	21CV4A5	Introduction to Accounting and Finance for Civil Engineers	8 Weeks

Ability Enhancement Courses ***			
Sl.No	**Course code**	**Courses**	**BRANCHES**
1	21HSAE39A	National Service Scheme (NSS)	Common for all the branches. Minimum one course under any vertical is mandatory, more than one also permitted.
2	21HSAE39B	National Cadet Corps (NCC)	
3	21HSAE39C	Physical Education	
4	21HSAE39D1/2/3	Music/Dance/Theatre	
5	21HSAE39E1/2	Art work/ Photography & Film making	

Semester: III						
INTEGRAL TRANSFORMS, OPTIMIZATION AND NUMERICAL TECHNIQUES (Theory) (Common to BT, CH, CV, IM, ME)						
Course Code	**:**	21MA31C		**CIE**	**:**	**100 Marks**
Credits: L:T:P	**:**	3:1:0		**SEE**	**:**	**100 Marks**
Total Hours	**:**	45L+15T		**SEE Duration**	**:**	**3.00 Hours**

Unit-I	**09 Hrs**
Laplace Transform: Existence and uniqueness of Laplace Transform (LT), transform of elementary functions, region of convergence. Properties - Linearity, scaling, s-domain shift, differentiation in the s-domain, division by t, differentiation and integration in the time domain. Transform of unit impulse function and periodic functions (square wave, saw-tooth wave, triangular wave, full and half wave rectifier).	
Unit – II	**09 Hrs**
Inverse Laplace Transform and solution to differential equations: Inverse Laplace transforms – properties, evaluation using different methods. Convolution theorem (without proof), problems. Applications to solve ordinary linear differential equations.	
Unit –III	**09 Hrs**
Fourier Series: Periodic function, even and odd functions. Dirichlet's conditions, Euler's formulae for Fourier series, problems on time periodic signals (square wave, half wave rectifier, saw-tooth wave and triangular wave), Fourier sine series, Fourier cosine series.	
Unit –IV	**09 Hrs**
Linear Programming: Mathematical formulation of Linear Programming Problem (LPP). Solving LPP using Graphical, Simplex and Big M methods.	
Unit –V	**09 Hrs**
Numerical Methods: Numerical solutions to partial differential equations – Finite difference approximation to derivatives, solution of Laplace equation in two dimension, heat and wave equations in one dimension (explicit methods).	

Course Outcomes: After completing the course, the students will be able to	
CO1:	Illustrate the fundamental concepts of Laplace and inverse Laplace transforms, Fourier series, linear programming and numerical methods.
CO2:	Apply the acquired knowledge of Laplace and inverse Laplace transforms, Fourier series, linear programming and numerical methods to solve the problems of engineering applications.
CO3:	Analyze the solution of the problems using appropriate techniques of Laplace and inverse Laplace transforms, Fourier series, linear programming and numerical methods to the real world problems arising in many practical situations.
CO4:	Interpret the overall knowledge of integral transforms Fourier series, linear programming and numerical methods gained to engage in life-long learning.

Reference Books	
1	Higher Engineering Mathematics, B.S. Grewal, 44th Edition, 2015, Khanna Publishers, ISBN: 978-81-933284-9-1.
2	Higher Engineering Mathematics, B.V. Ramana, 11th Edition, 2010, Tata McGraw-Hill, ISBN: 13-978-07-063419-0; ISBN: 10-0-07-063419-X.
3	Advanced Engineering Mathematics, E. Kreyszig, 10th Edition (Reprint), 2016. John Wiley & Sons, ISBN: 978-0470458365.
4	Numerical Methods for Engineers, Steven C Chapra and Raymond P Canale, McGraw Hill Publishing Co., 8th edition, 2021, ISBN: 978-9-35-460136-1.

ASSESSMENT AND EVALUATION PATTERN		
	CIE	**SEE**
WEIGHTAGE	**50%**	**50%**
QUIZZES		
Quiz-I	Each quiz is evaluated for 10 marks adding up to **20 MARKS**	
Quiz-II		
THEORY COURSE (Bloom's Taxonomy Levels: Remembering, Understanding, Applying, Analyzing, Evaluating, and Creating)		
Test – I	Each test will be conducted for 50 Marks adding upto 100 marks. Final test marks will be reduced to **40 MARKS**	
Test – II		
EXPERIENTIAL LEARNING	**40**	
MATLAB	**20**	
Model presentation/ case study/ video preparation	**20**	
MAXIMUM MARKS FOR THE THEORY	**100 MARKS**	**100 MARKS**

Semester: III						
ENVIRONMENTAL TECHNOLOGY (Theory)						
Course Code	**:**	**21BT32A**		**CIE**	**:**	**50 Marks**
Credits: L:T:P	**:**	**2:0:0**		**SEE**	**:**	**50 Marks**
Total Hours	**:**	**26 Hrs**		**SEE Duration**	**:**	**1.5 Hrs**

Unit I	08 Hrs
Introduction: Climate action – Paris convention, Sustainable Developmental Goals in relation to environment, Components of environment, Ecosystem. Environmental education, Environmental acts & regulations, role of non-governmental organizations (NGOs), EMS: ISO 14000, Environmental Impact Assessment. Environmental auditing.	
Unit II	09 Hrs
Pollution and its remedies: Air pollution – point and non-point sources of air pollution and their controlling measures (particulate and gaseous contaminants). Noise pollution, Land pollution (sources, impacts and remedial measures), **Water management:** Advanced water treatment techniques, water conservation methods. **Waste management:** Solid waste, e-waste & biomedical waste– sources, characteristics & disposal methods. Concepts of Reduce, Reuse and Recycling of the wastes. **Waste to Energy:** Different types of Energy, Conventional sources & Non-conventional sources of energy: Solar, Hydro Electric, Wind, Nuclear, Biomass & Biogas Fossil Fuels and Hydrogen.	
Unit III	09 Hrs
Environmental design: Green buildings, green materials, Leadership in Energy and Environmental Design (LEED), Hydroponics, Organic Farming, Biofuels, IC engine to E mobility transition and its impacts, Carbon Credits, Carbon Foot Prints, Opportunities for Green Technology Markets, Carbon Sequestration. **Resource recovery system:** Processing techniques, Materials recovery systems, Biological conversion (composting and anaerobic digestion). Thermal conversion products (Combustion, Incineration, Gasification, Pyrolysis, use of Refuse Derived Fuels). Case studies.	

Course Outcomes: After completing the course, the students will be able to	
CO1:	Illustrate the fundamental concepts of linear algebra, Laplace and inverse Laplace transforms, Fourier series and Fourier transforms.
CO2:	Apply the acquired knowledge of linear algebra, Laplace and inverse Laplace transforms, Fourier series and Fourier transforms to solve the problems of engineering applications.
CO3:	Analyzethe solution of the problems using appropriate techniques of linear algebra, integral transforms and Fourier series to the real world problems arising in many practical situations.
CO4:	Interpret the overall knowledge of linear algebra, integral transforms and Fourier series gained to engage in life-long learning.

Reference Books	
1.	Shashi Chawla, A Textbook of Environmental Studies, McGraw Hill Education, 2017, ISBN: 1259006387,
2.	Richard A Schneider and Jerry A Nathanson, Basic Environmental Technology, Pearson, 6th Edition, 2022. ISBN: 9789332575134,
3.	G. Tyler Miller (Author), Scott Spoolman (Author), (2020) Environmental Science – 15th edition, Publisher: Brooks Cole, ISBN-13: 978-1305090446 ISBN-10: 130509044
4.	Howard S. Peavy, Donald R. Rowe and George Tchobanoglous. 2000. Environmental Engineering, McGraw Hill Education, First edition (1 July 2017). ISBN-10**:** 9351340260, ISBN-13**:** 978-9351340263

Experiential Learning Topics	
Assessment of the environment of certain big campuses/areas/industries etc, a case study	
1	Development of data sheet
2	Survey and its record
3	Identifying the problems associated
4	Provide a solution for the identified problem

Experiments to be Performed	
1	Data development
2	Working model (in silico or demo model)
3	Preparing a report
4	Brainstorming of the work carried out.

ASSESSMENT AND EVALUATION PATTERN		
	CIE	**SEE**
WEIGHTAGE	**50%**	**50%**
QUIZZES		
Quiz-I	Each quiz is evaluated for 5 marks adding up to 1**0 MARKS.**	*****
Quiz-II		
THEORY COURSE (Bloom's Taxonomy Levels: Remembering, Understanding, Applying, Analyzing, Evaluating, and Creating)		*****
Test – I	Each test will be conducted for 25 Marks adding upto 50 marks. Final test marks will be reduced to 2**0 MARKS**	*****
Test – II		
EXPERIENTIAL LEARNING (Maximum of 20 Marks)		*****
Case Study-based Teaching-Learning	**10**	*****
Experiments performed	**10**	
MAXIMUM MARKS FOR THE THEORY	**50 MARKS**	**50 MARKS**
TOTAL MARKS FOR THE COURSE	**50**	**100**

Semester: III						
Mechanics of Materials (Theory & Practical)						
Course Code	**:**	**21CV33**		**CIE**	**:**	**100 Marks+ 50Marks**
Credits: L:T:P	**:**	**3:0:1**		**SEE**	**:**	**100 Marks + 50Marks**
Total Hours	**:**	**45 Hrs + 30 Hrs**		**SEE Duration**	**:**	**3.00 Hours + 3.00 Hours**

Unit-I	**09 Hrs**
Importance of MoM for Engineers: Mechanical / civil structure, Types of loads, operating conditions, Load bearing capacity of the structure, ultimate stress, allowable stress, factor of safety, types of failure, concept of design for strength in industries. Thermal stress in simple and compound bars, **Torsion of shafts**: Assumptions in theory of pure torsion, Torsion equations, Torsional rigidity and modulus of rupture, Power transmitted, Comparison of solid and hollow circular shafts. Numerical problems	
Unit -II	**09 Hrs**
Bending moment and shear force in beams: Introduction, Types of beams, Loads and Reactions, Shear forces and bending moments, Rate of loading, Sign conventions, Relationship between shear force and bending moments, Shear force and bending moment diagrams subjected to concentrated loads, uniform distributed load, informally varying load, couple and their combinations. Numerical problems	
Unit –III	**09 Hrs**
Bending stress in beams: Introduction, Assumptions in simple bending theory, Derivation of Bernoulli's equation, Modulus of rupture, Section modulus, Flexural rigidity, Bending stress distribution in beams of various sections. **Shear stresses in beams**: Expression for horizontal shear stress in beam, Shear stress diagram for simple rectangular, I section and Tsections only. Numerical problems	
Unit –IV	**09 Hrs**
Deflection of determinate Beams: Introduction, Definitions of slope, Deflection, Elastic curve, Derivation of differential equation of flexure, Sign convention, Double integration method, Slope and deflection using Macaulay's method for prismatic beams and overhanging beams subjected to point loads, UDL and couple. Numerical problems.	
Unit - V	**09 Hrs**
Analysis of columns and struts: Introduction, Euler's theory on columns, Effective length, Slenderness ratio, Short and long columns, Radius of gyration, Buckling load, Derivation of Euler's Buckling load for different end conditions, Limitations of Euler's theory, Rankine's formula. Numerical problems **Pressure vessels:** Stresses in thin cylinders, Changes in dimensions of cylinder (diameter, length and volume), Thick cylinders subjected to internal and external pressures (Lame's equation), (Compound cylinders not included).	

Laboratory

1. Fineness modulus of Coarse and Fine aggregate
2. Impact strength, crushing strength test on coarse aggregate.
3. Compressive strength tests on building blocks (brick, solid blocks and hollow blocks)
4. UTM Tension test on Mild steel and HYSD bars.
5. Compression test on HYSD bars and Cast iron.
6. Bending Test on Wood under two-point loading.
7. Shear test on Mild steel
8. Torsion test
9. Flexure test on tiles

Course Outcomes: After completing the course, the students will be able to	
CO1:	Illustrate the mechanical behaviour of various members
CO2:	Apply the basic concepts of mechanics in determining the stress developed in the materials
CO3:	Evaluate the behaviour of materials under various loading condition
CO4:	Examine the mechanical properties of various materials under different loading conditions

Reference Books	
1	Mechanics of Materials, R. C. Hibbler, ,SI Edition, April 2018, Pearson Publications, ISBN-13:978-9332584037
2	Elements of Strength of Materials, Timoshenko and Young, Affiliated East-West Press,2011 5th Edition, ISBN: 9788176710190.
3	Mechanics of Materials, F.P.Beer and R.Johnston, McGraw-Hill Publishers, 2007, 7th Edition, ISBN 978-0073398235.
4	A Textbook of Strength of Materials: Mechanics of Solids, R.K. Bansal, 2018, Laxmi Publications, 6th Edition, ISBN-13: 978-8131808146.
5	Theory of Structures, S. Ramamrutham, 9th Edition ,2014, DhanpatRai Publishing Company Private Limited, New Delhi; ISBN-13: 978-9384378103.
6	Basic Structural Analysis, Reddy C.S., 3rd Edition, 1 July 2017, Tata McGraw Hill Publication Company Ltd., New Delhi, ISBN 13: 978-0070702769.

ASSESSMENT AND EVALUATION PATTERN		
WEIGHTAGE	**50%**	**50%**
QUIZZES		
Quiz-I	Each quiz is evaluated for 10 marks adding up to **20 MARKS.**	*****
Quiz-I		
THEORY COURSE (Bloom's Taxonomy Levels: Remembering, Understanding, Applying, Analyzing, Evaluating, and Creating)		
Test – I	Each test will be conducted for 50 Marks adding upto 100 marks. Final test marks will be reduced to **40 MARKS**	*****
Test – II		
EXPERIENTIAL LEARNING	**40**	*****
Case Study-based Teaching-Learning	**10**	*****
Sector wise study & consolidation	**20**	
Video based seminar (4-5 minutes per student)	**10**	
MAXIMUM MARKS FOR THE THEORY	**100 MARKS**	**100 MARKS**
PRACTICALS	**50 MARKS**	**50 MARKS**
TOTAL MARKS FOR THE COURSE	**150**	**150**

Semester: III						
SURVEYING (Theory & Practice)						
Course Code	**:**	**21CV34**		**CIE**	**:**	**50Marks+ 50Marks**
Credits: L:T:P		**2+0+2**		**SEE**	**:**	**50 Marks + 50Marks**
Total Hours	**:**	**30L+60P**		**SEE Duration**	**:**	**3.00 Hours + 3.00 Hours**

Unit-I	**06 Hrs**
Fundamentals of Maps: Maps - types; scales-types; measuring distance; finding direction and use of symbols. Map projection - Latitude, Longitude and time, Topographical survey – Toposheets and Principles of topo sheet numbering, Analysis of landforms using maps. **History of Surveying**: Definition of Surveying, Uses of Surveying, Basic principles of surveying, Classification of Surveys. Introduction to Chain surveying, Compass surveying, Plane table surveying and Theodolite surveying. Booking of chain survey work - Field book entries. Calculation of land area using data collected through chain survey.	
Unit – II	**06Hrs**
Leveling: Principles and basic definitions, Fundamental axes and parts of a dumpy level, types of adjustments and objectives, temporary adjustments of a dumpy level, Types of leveling – Simple leveling, Profile leveling, fly leveling and cross sectioning. Booking of levels 1. Rise and fall method 2. Height of instrument method – comparison, Arithmetic checks. Numerical problems.	
Unit –III	**06 Hrs**
Contour Survey: Contours and their characteristics, Methods of contouring – direct and indirect methods (Grid and Cross section method), Uses of contours. **Total Station:** Introduction - Parts of a Total Station – Accessories – Advantages - Limitations and Applications, Complete procedure for total station survey, data transfer, preparation of maps.	
Unit –IV	**06 Hrs**
Modern surveying: GPS, DGPS, Drone surveying and LiDAR. **Photogrammetry:** Principles of Photogrammetry, Types – Terrestrial and Aerial Photogrammetry, Advantages over ground survey methods - geometry of vertical photographs, scales of vertical photographs. Flight planning.	
Unit –V	**06 Hrs**
Remote Sensing and GIS: Introduction, Principles, Types and Applications of Remote Sensing. Introduction to GIS, functions and advantages, sources of data for GIS. Geographical Information System, Key Components of GIS, Functions of GIS, Data Management and Transformation. Data input methods, data analysis. Overlay operations, Network analysis and Spatial analysis.	

Laboratory
The topics and the numerical problems covered in practical sessions will be included in the Theory CIE and SEE.
I. Chain Surveying 1. To conduct a chain survey of flat area with details including field book entry, perpendicular and oblique offsets. Survey book entry and prepare a plan by converting to an appropriate scale.
II. Levelling 2. To determine difference in elevation between two points using differential levelling technique, using height of the instrument method and rise and fall methods. With at least one point above the line of sight. 3. To perform profile levelling and to draw the longitudinal section and cross section to determine the depth of cut and height of filling for a given formation level.

III. Total station 4. Study of Total Station: Basic accessories, basic operations, creating a file, orientation, back sight and accuracy. 5. To determine the elevation, distance and gradient between two inaccessible points using total station. 6. Traversing using total station: Data collection, data transfer, area calculation and map preparation. 7. Contour surveying using total station: Data collection, data transfer, area calculation and map preparation.
IV. Curves 8. To set out simple curves using linear methods-perpendicular offsets from long chord and Rankine's deflection angles method (Only the directions of forward tangent and backboard tangent is provided and deflection angle needs to be measured in the field). 9. To set out compound curve using Rankine's deflection angles method. (Only the directions of forward tangent and backboard tangent is provided and deflection angle needs to be measured in the field)
V. GIS (Using open source software QGIS) 10. Geo-referencing the hard copy maps. 11. To generate thematic maps using GIS Software. (Including rectifying and mosaicing)
VI. Differential Global Positioning System (DGPS) - Demonstration 12. RTK (Real Time Kinematics) survey for location data gathering and establishing ground control point using DGPS.

Course Outcomes: After completing the course, the students will be able to	
CO1:	Describe fundamental concepts of Surveying, Levelling, Total station and application of Remote Sensing, GIS and DGPS.
CO2:	Discuss components of all types of surveying.
CO3:	Apply the concepts of measurements in engineering problems.
CO4:	Demonstrate the applications of Remote Sensing, GIS and DGPS for solving engineering problems.

Reference Books	
1	Punmia B.C, "Surveying" Vol.I and Vol.II, Laxmi Publications, (P) Ltd, New Delhi 2010. ISBN 81-7008-853-4
2	Chandra A.M, "Plane surveying", Newage International (P) Ltd., 2009. ISBN 81-224-1902-X
3	Remote Sensing and GIS by B Bhatia, Oxford University Press, New Delhi.
4	Duggal S.K, "Surveying", Vol.I & II, Tata Mc Graw Hill Publishing Co., 2009, ISBN 978-0-07-015137-6: ISBN 0-07-015137-7.
5	Arora K.R, "Surveying", Vol.I & II, Standard Book House, 2009. ISBN 81-89401-23-8
6	Lillesand and Kiefer, "Principles of Remote sensing and Image Interpretation", (5th Edition) John Wiley Publishers, New Delhi, 2007.

ASSESSMENT AND EVALUATION PATTERN		
WEIGHTAGE	**50%**	**50%**
QUIZZES		
Quiz-I	Each quiz is evaluated for 10 marks adding up to **20 MARKS.**	*****
Quiz-II		
THEORY COURSE (Bloom's Taxonomy Levels: Remembering, Understanding, Applying, Analyzing, Evaluating, and Creating)		
Test – I	Each test will be conducted for 50 Marks adding upto 100 marks. Final test marks will be reduced to **40 MARKS**	*****
Test – II		
EXPERIENTIAL LEARNING	**40**	*****
Case Study-based Teaching-Learning	**10**	*****
Sector wise study & consolidation	**20**	
Video based seminar (4-5 minutes per student)	**10**	
MAXIMUM MARKS FOR THE THEORY	**50 MARKS**	**50 MARKS**
PRACTICALS	**50 MARKS**	**50 MARKS**
TOTAL MARKS FOR THE COURSE	**100**	**100**

Semester: III						
CONCRETE TECHNOLOGY (Theory & Practice)						
Course Code	**:**	**21CV35**		**CIE**	**:**	**100 Marks**
Credits: L:T:P	**:**	**3:0:1**		**SEE**	**:**	**100 Marks**
Total Hours	**:**	**45L+30P**		**SEE Duration**	**:**	**3.00 Hours**

Unit-I	**09 Hrs**
Cement: Manufacturing of cement (dry and wet process), Hydraulic Cement, Bogue's compounds, Types of cement, Hydration, product of hydration and its importance, importance of water cement ratio, Transition zone, brief description of field and laboratory testing of cement, water and its quality, Gel-space ratio (Numerical problems)	
Unit – II	**09 Hrs**
Concrete: Manufacturing Concrete: Mixing, Transporting, Placing, Compaction and Curing, Importance of Curing and Methods of Curing, Segregation, Bleeding. Workability: Factors affecting workability, Measurement by various tests, Recommendations of IS: 456-2000 - Sampling procedure, Acceptance criteria, Rheology- Importance, Bingham Parameters.	
Unit –III	**09 Hrs**
Admixtures: Chemical admixtures. Action of plasticizers, Water reducers, super plasticizers, accelerators, retarders, air entraining admixtures. Mineral admixtures: GGBS, Fly-ash, metakaolin, silica fume, Rice husk ash. **Durability:** Significance of Durability in concrete – Chemical attack, Alkali aggregate reaction, Permeability, water absorption.	
Unit –IV	**09 Hrs**
Strength: Compressive Strength, Abrams' law, Importance of Strength development with age, Maturity concept (Numerical Problems), accelerated curing, Relation between compressive and tensile strength, Flexural strength, Methods of finding the strength. Modulus of elasticity and its acceptance criteria. **NDT:** Importance of Non-destructive tests, Rebound hammer test, Ultra-sonic pulse velocity test, Penetration and pull-out test, Profometer, Semi Destructive test.	
Unit –V	**09 Hrs**
Concrete mix Design: Significance and objectives of concrete mix proportioning, General Considerations, Mix proportioning using IS 10262: 2019 method (Numerical problems on conventional concrete, concrete with Fly-ash and GGBS, High-strength Concrete), Quality control, Frequency of testing	

Laboratory
1. Bulking of sand and water absorption of coarse aggregate
2. Specific gravity of cement, Fine and Coarse aggregate
3. Consistency of Cement, Initial and final setting time of cement
4. Compressive Strength of cement
5. Mix Design and Workability tests on fresh concrete (Slump Test, Compaction Factor Test and Vee-Bee consistometer)
6. Tests on Hardened concrete Properties(Compressive Strength, Split Tensile Strength)
7. Flow test on cement mortar
8. Soundness test on cement
9. Flexural Strength of concrete
10. Demonstration of NDT test

Course Outcomes: After completing the course, the students will be able to	
CO1:	Discuss the influence of the properties of ingredients of materials in concrete
CO2:	Explain the requirement of engineering properties of concrete for structural and non-structural uses
CO3:	Apply fundamental principles, procedures and various specifications for proportioning of concrete mixes
CO4:	Estimate the strength of concrete, causes of deterioration of concrete by various test methods

Reference Books	
1	Concrete technology, Shanthakumar. A. R, Apr 2018, Oxford University Press, New Delhi, ISBN13: 978-0199458523
2	Concrete Technology: Theory and Practice, M. S. Shetty A. K. Jain, 8th Edition, 2018, S Chand Publishing, ISBN-13: 978-9352533800
3	Concrete: Microstructure, Properties, and Materials, P. Kumar Mehta, Paulo J.M. Monteiro, 4th Edition, Jul 2017, McGraw Hill Education; ISBN-13: 978-9339204761.
4	Properties of concrete, Neville. A.M, 5th Edition, 2012, Pearson Education, Inc, and Dorling Kindersley Publishing Inc., ISBN-13: 978-8131791073
5	Concrete Technology: Theory and Practice, M.L. Gambhir, 5th Edition, 2017, McGraw Hill Education, ISBN-13: 978-1259062551
6	IS 10262: 2019, Concrete Mix proportioning guidelines IS 456:2000 Plain and Reinforced Concrete

ASSESSMENT AND EVALUATION PATTERN		
WEIGHTAGE	**50%**	**50%**
QUIZZES		
Quiz-I	Each quiz is evaluated for 10 marks adding up to **20 MARKS.**	*****
Quiz-II		
THEORY COURSE (Bloom's Taxonomy Levels: Remembering, Understanding, Applying, Analyzing, Evaluating, and Creating)		
Test – I	Each test will be conducted for 50 Marks adding upto 100 marks. Final test marks will be reduced to **40 MARKS**	*****
Test – II		
EXPERIENTIAL LEARNING	**40**	*****
Case Study-based Teaching-Learning	**10**	*****
Sector wise study & consolidation	**20**	
Video based seminar (4-5 minutes per student)	**10**	
MAXIMUM MARKS FOR THE THEORY	**100MARKS**	**100 MARKS**
PRACTICALS	**50 MARKS**	**50 MARKS**
TOTAL MARKS FOR THE COURSE	**150**	**150**

Semester: III						
PYTHON PROGRAMMING (Theory)						
Course Code	**:**	**21CV36**		**CIE**	**:**	**50 Marks**
Credits: L:T:P	**:**	**2:0:0**		**SEE**	**:**	**50 Marks**
Total Hours	**:**	**30L**		**SEE Duration**	**:**	**2.00 Hours**

Unit-I	**06 Hrs**
INTRODUCTION **Introduction to Python** and installation, data types: Int, float, Boolean, string, and list; variables, expressions, statements, precedence of operators, comments; modules, functions--- function and its use, flow of execution, parameters and arguments.	
Unit – II	**06Hrs**
CONTROL FLOW, LOOPS **Conditionals:** Boolean values and operators, conditional (if), alternative (if-else), chained conditional (if-elif-else); Iteration: while, for, break, continue.	
Unit –III	**06 Hrs**
FUNCTIONS, ARRAYS **Fruitful functions:** return values, parameters, local and global scope, function composition, recursion; Strings: string slices, immutability, string functions and methods, string module; Python arrays, Access the Elements of an Array, array methods.	
Unit –IV	**06 Hrs**
LISTS, TUPLES, DICTIONARIES Lists: list operations, list slices, list methods, list loop, mutability, aliasing, cloning lists, list, list comprehension. Tuples: tuple assignment, tuple as return value, tuple comprehension. Dictionaries: operations and methods, comprehension.	
Unit –V	**06 Hrs**
FILES, EXCEPTIONS, MODULES, PACKAGES Files and exception: text files, reading and writing files, command line arguments, errors and exceptions, handling exceptions, modules (date, time, OS , calendar, math module), Explore packages.	

Course Outcomes: After completing the course, the students will be able to	
CO1:	Understand the fundamentals of IoT and Python programming.
CO2:	Apply Python programs for applications in Civil Engineering.
CO3:	Identify and apply python data types for compound data using lists, tuples and dictionaries.
CO4:	Integrate python with sensors, actuators through programming boards.

Reference Books	
1	Think Python: How to Think Like a Computer Scientist, Allen B. Downey, 2016, O'Reilly Media, Inc., 2nd edition, Copyright © 2016 Allen Downey.
2	Python Programming: A Modern Approach, Vamsi Kurama, 2018, Pearson, ASIN : B07HB46QF4
3	Core Python Programming, Chun Wesley J, 2006, Pearson, 2nd Edition, ASIN : B002VJ9HSO
4	Fundamentals of Python: First Programs, Kenneth A. Lambert, 2018, Course Technology Inc, 2nd edition (1 January 2018), ASIN : 133756009X
5	Internet of Things (A Hands-on-Approach), Vijay Madisetti and ArshdeepBahga, 1st Edition,VPT, 2014, ISBN-13: 978-0996025515.
6	Internet of Things – From Research and Innovation to Market Deployment, OvidiuVermesan, Peter Friess, River Publishers Series in Communication, River Publishers, 2014, ISBN: ISBN: 978-87-93102-94-1 (Hard copy), 978-87-93102-95-8 (Ebook) (UnitsII 2nd part)

ASSESSMENT AND EVALUATION PATTERN		
WEIGHTAGE	**50%**	**50%**
QUIZZES		
Quiz-I	Each quiz is evaluated for 10 marks adding up to **20 Marks.** Final quiz marks will be reduced to **10 Marks.**	*****
Quiz-I		
THEORY COURSE (Bloom's Taxonomy Levels: Remembering, Understanding, Applying, Analyzing, Evaluating, and Creating)		
Test – I	Each test will be conducted for 25 Marks adding upto 50 marks. Final test marks will be reduced to **20 MARKS**	*****
Test – II		
EXPERIENTIAL LEARNING	**20**	*****
Case Study-based Teaching-Learning	**5**	*****
Sector wise study & consolidation	**10**	
Video based seminar (4-5 minutes per student)	**5**	
MAXIMUM MARKS FOR THE THEORY	**50 MARKS**	**50MARKS**
PRACTICALS	**-**	**-**
TOTAL MARKS FOR THE COURSE	**50**	**50**

Semester: III						
Bridge Course: MATHEMATICS (Common to all branches)						
Course Code	**:**	**21DMA37**		**CIE**	**:**	**50 Marks**
Credits: L:T:P	**:**	**2:0:0**		**SEE**	**:**	**50 Marks**
Audit Course				**SEE Duration**	**:**	**2.00 Hours**

Unit-I	**05 Hrs**
Differential Calculus: Partial derivatives – Introduction, simple problems. Total derivative, composite functions. Jacobians– simple problems.	
Unit – II	**05 Hrs**
Vector Differentiation: Introduction, simple problems in terms of velocity and acceleration. Concepts of gradient, divergence – solenoidal vector function, curl– irrotational vector function and Laplacian, simple problems.	
Unit –III	**06 Hrs**
Differential Equations: Higher order linear differential equations with constant coefficients, solution of homogeneous equations - Complementary functions. Non-homogeneous equations –Inverse differential operator method of finding particular integral based on input function (force function).	
Unit –IV	**05 Hrs**
Numerical Methods: Solution of algebraic and transcendental equations –Intermediate value property, Newton-Raphson method. Solution of first order ordinary differential equations – Taylor series and 4^{th} order Runge-Kutta methods. Numerical integration – Simpson's $1/3^{rd}$, $3/8^{th}$ and Weddle's rules. (All methods without proof)**.**	
Unit –V	**05 Hrs**
Multiple Integrals: Evaluation of double integrals, change of order of integration. Evaluation of triple integrals. Applications – Area, volume and mass – simple problems.	

Course Outcomes: After completing the course, the students will be able to	
CO1:	Illustrate the fundamental concepts ofpartial differentiation, double integrals, vector differentiation, solutions of higher order linear differential equations and numerical methods.
CO2:	Derive the solution by applying the acquired knowledge of total derivatives of implicit functions, Jacobians, homogeneous linear differential equations, velocity and acceleration vectors to the problems of engineering applications.
CO3:	Evaluate the solution of the problems using appropriate techniques of differential and integral calculus, vector differentiation, differential equations and numerical methods to the real world problems arising in many practical situations.
CO4:	Compile the overall knowledge of differential and integral calculus, vector differentiation, differential equations and numerical methods gained to engage in life – long learning.

Reference Books	
1	B.S. Grewal, Higher Engineering Mathematics, Khanna Publishers, 44th Edition, 2015, ISBN: 978-81-933284-9-1.
2	Higher Engineering Mathematics, B.V.Ramana, 11thEdition,2010, Tata McGraw-Hill,ISBN: 978-0-07-063419-0.
3	N.P. Bali & Manish Goyal, A Text Book of Engineering Mathematics, Lakshmi Publications, 7th Edition, 2010, ISBN: 978-81-31808320.
4	Advanced Engineering Mathematics, E. Kreyszig, 10th Edition (Reprint), 2016. John Wiley & Sons, ISBN: 978-0470458365.

ASSESSMENT AND EVALUATION PATTERN		
WEIGHTAGE	**50%**	**50%**
QUIZZES		
Quiz-I	Each quiz is evaluated for 10 marks adding up to **20 Marks.**	*****
Quiz-I		
THEORY COURSE (Bloom's Taxonomy Levels: Remembering, Understanding, Applying, Analyzing, Evaluating, and Creating)		
Test – I	Each test will be conducted for 25 Marks adding upto 50 marks. Final test marks will be reduced to **30 MARKS**	*****
Test – II		
EXPERIENTIAL LEARNING	*****	*****
Case Study-based Teaching-Learning	*****	*****
Sector wise study & consolidation	*****	
Video based seminar (4-5 minutes per student)	*****	
MAXIMUM MARKS FOR THE THEORY	**50 MARKS**	**50MARKS**
PRACTICALS	**-**	**-**
TOTAL MARKS FOR THE COURSE	**50**	**50**

Semester III						
Course Title: DESIGN THINKING LAB (Practice)						
Course Code	**:**	**21CV39**		**CIE Marks**	**:**	**50 Marks**
Credits: L:T:P	**:**	**0:0:2**		**SEE Marks**	**:**	**50 Marks**
Total Hours	**:**	**39 Hrs**		**SEE Duration**	**:**	**3 Hours**

Unit - I	**10 Hrs**
Understanding Design thinking: Design Thinking Methodology: The 5 Stages of the Design Thinking Process-Empathise, Define (the problem), Ideate, Prototype, and Test. Shared model in team-based design – Theory and practice in Design thinking – Explore presentation signers across globe – Multivarible product or Prototyping, Real-Time design interaction capture and analysis – Enabling efficient collaboration in digital space – Empathy for design – Collaboration in distributed Design	
Unit - II	**15 Hrs**
DT For strategic innovations Growth: Story telling representation – Strategic Foresight - Change – Sense Making - Maintenance Relevance – Value redefinition - Extreme Competition – experience design - Standardization – Humanization - Creative Culture – Rapid prototyping, Strategy and Organization – Business Model design.	
Unit - III	**14 Hrs**
Design Thinking Workshop: The Design Challenge: Define the Design Challenge, Prototyping & Iteration- Feasibility Study, Testing- Documentation and the Pitching: 10 hours design thinking workshop from the expect and then presentation by the students on the learning from the workshop,	

Course Outcomes: After completing the course, the students will be able to	
CO1:	Understanding various design process procedure
CO2:	Explore reverse engineering to understand products
CO3:	Develop technical drawing/prototype for design ideas
CO4:	Create design ideas through different techniques

References Books:	
1	Kilion Langenfeld, Design Thinking for Beginners, Personal Growth Hackers, ISBN: 13-9783967160628
2	Andrew Pressman, Design Thinking: A Guide to Creative Problem Solving for Everyone, Routeldge Taylor & Francis Grovel, 1st Edition, 2018, ISBN: 13-978-1-315-56193-6
3	Walter Brenner, Falk Uebernickel, Design Thinking for Innovation Research and Practice, Springer, 1st Edition, 2016, ISBN: 13-9783319260983
4	Emrah Yayici, Design Thinking Methodology Book, ArtBiz Tech Publishers, 1st Edition, 2016, ISBN:10-6058603757, 13-9786058603752

ASSESSMENT AND EVALUATION PATTERN		
	CIE	**SEE**
WEIGHTAGE	**50%**	**50%**
PRACTICALS	**50**	**50**
TOTAL MARKS FOR THE COURSE	**50**	**50**

Semester III						
Course Title: SUMMER INTERNSHIP-I (Practice)						
Course Code	**:**	**21CVI310**		**CIE Marks**	**:**	**50 Marks**
Credits: L:T:P	**:**	**0:0:2**		**SEE Marks**	**:**	**50 Marks**
Total Hours	**:**	**3 Weeks**		**SEE Duration**	**:**	**1 Hours**

1. A minimum of 1 credit of internship after I year may be counted towards B.E. degree program.
2. During II semester to III semester transition, Three weeks of internship is mandatory.
3. Internship report and certificate need to be submitted at the end of the internship to the concerned department for the evaluation.
4. Internship evaluation will be done during III semester for 1 credit in two phases.

Students can opt the internship with the below options	**3 Weeks**

A. Within the respective department at RVCE (Inhouse) Departments may offer internship opportunities to the students through the available tools so that the students come out with the solutions to the relevant societal problems that could be completed within THREE WEEKS.

B. At RVCE Center of Excellence/Competence

RVCE hosts around 16 CENTER OP EIXCELLENCE in various domains and around 05 CENTER OP COMPETENCE. The details of these could be obtained by visiting the website https:/ /rvce.edu.in / rvce-center-excellence. Each center would be providing the students relevant training/internship that could be completed in three weeks.

C. At Intern Shala

Intern Shala is India's no.1 internship and training platform with 40000+ paid internships in Engineering. Students can opt any internship for the duration of three weeks by enrolling on to the platform through https: / /internsha1a.com

D. At Engineering Colleges nearby their hometown

Students who are residing out of Bangalore, should take permission from the nearing Engineering College of their hometown to do the internship. The nearby college should agree to give the certificate and the letter/email stating the name of the student along with the title of the internship held with the duration of the internship in their official letter head.

E. At Industry or Research Organizations

Students can opt for interning at the industry or research organizations like BEL, DRDO, ISRO, BHEL, etc.. through personal contacts. However, the institute/industry should provide the letter of acceptance through hard copy/email with clear mention of the title of the work assigned along with the duration and the name of the student.

Procedures for the Internship:

1. Request letter/Email from the office of respective departments should go to Places where internships are intended to be carried out with a clear mention of the duration of Three Weeks. Colleges/Industry/ CoEs/CoCs will confirm the training slots and the number of seats allotted for the internship via confirmation letter/ Email.
2. Students should submit a synopsis of the proposed work to be done during internship program. Internship synopsis should be assessed or evaluated by the concerned Colleges/Industry/CoEs/CoC. Students on joining internship at the concerned Colleges/Industry/ CoEs/CoCs submit the Daily log of student's dairy from the joining date.
3. Students will submit the digital poster of the training module/project after completion of internship.
4. Training certificate to be obtained from industry.

Course Outcomes: After completing the course, the students will be able to	
CO1:	Develop communication, interpersonal, critical skills, work habits and attitudes necessary for employment.
CO2:	Assess interests, abilities in their field of study, integrate theory and practice and explore career opportunities prior to graduation.
CO3:	Explore and use state of art modern engineering tools to solve societal problems with affinity towards the environment and involve in professional ethical practice.
CO4:	Compile, document and communicate effectively on the internship activities with the engineering community.

ASSESSMENT AND EVALUATION PATTERN		
	CIE	**SEE**
Phase – I	**20**	**50**
Phase- II	**30**	
TOTAL MARKS FOR THE COURSE	**50**	

Semester: IV						
STATISTICSAND PROBABILITY FOR DATA SCIENCE (Theory) (Common to ALL Programs)						
Course Code	**:**	**21MA41**		**CIE**	**:**	**100 Marks**
Credits: L:T:P	**:**	**2:1:0**		**SEE**	**:**	**100 Marks**
Total Hours	**:**	**30L+15T**		**SEE Duration**	**:**	**3.00 Hours**

Unit-I	**06 Hrs**
Statistics: Central moments, mean, variance, coefficients of skewness and kurtosis in terms of moments. Correlation analysis, rank correlation, linear and multivariate regression analysis–problems.	
Unit – II	**06 Hrs**
Random Variables: Random variables-discrete and continuous, probability mass function, probability density function, cumulative density function, mean and variance. Two or more random variables - Joint probability mass function, joint probability density function, conditional distribution and independence, Covariance and Correlation.	
Unit –III	**06 Hrs**
Probability Distributions: Discrete distributions - Binomial, Poisson. Continuous distributions – Exponential, Normal and Weibul.	
Unit –IV	**06 Hrs**
Sampling and Estimation: Population and sample, Simple random sampling (with replacement and without replacement). Sampling distributions of means (σ known), Sampling distributions of mean (σ unknown): t - distribution, Sampling distributions of variance (σ unknown): Chi - squared distribution. Estimation - Maximum Likelihood Estimation (MLE).	
Unit –V	**06 Hrs**
Inferential Statistics: Principles of Statistical Inference, Test of hypothesis - Null and alternative hypothesis, Procedure for statistical testing, Type I and Type II errors, level of significance, Tests involving the normal distribution, one – tailed and two – tailed tests, P – value, Special tests of significance for large and small samples (F, Chi – square, Z, t – test).	

Course Outcomes: After completing the course, the students will be able to	
CO1:	Illustrate the fundamental concepts of statistics, random variables, distributions, sampling, estimation and statistical hypothesis.
CO2:	Apply the acquired knowledge of statistics, random variables, distributions, sampling, estimation and statistical hypothesis to solve the problems of engineering applications.
CO3:	Analyzethe solution of the problems using appropriate statistical and probability techniques to the real world problems arising in many practical situations.
CO4:	Interpret the overall knowledge of statistics, probability distributions and sampling theory gained to engage in life-long learning.

Reference Books	
1	Theory and Problems of Probability, Seymour Lipschutz& Marc Lars Lipson, 2nd Edition, Schaum's Outline Series, McGraw – Hill,2000, ISBN: 9780071386517.
2	Applied Statistics and Probability for Engineers, Douglas C. Montgomery and George C. Runger, 7th Edition, John Wiley & Sons, 2019, ISBN:9781119570615.
3	Probability & Statistics for Engineers & Scientists, Ronald E. Walpole & Raymond H. Myers, 9th edition, 2016, Pearson Education, ISBN-13: 9780134115856.
4	The Elements of Statistical Learning - Data Mining, Inference, and Prediction, Trevor Hastie Robert Tibshirani Jerome Friedman, 2ndEdition, 2009 (Reprint 2017), Springer, ISBN-10: 0387848576, ISBN-13: 9780387848570.

ASSESSMENT AND EVALUATION PATTERN		
	CIE	**SEE**
WEIGHTAGE	**50%**	**50%**
QUIZZES		
Quiz-I	Each quiz is evaluated for 10 marks adding up to **20 MARKS**	
Quiz-II		
THEORY COURSE (Bloom's Taxonomy Levels: Remembering, Understanding, Applying, Analysing, Evaluating, and Creating)		
Test – I	Each test will be conducted for 50 Marks adding up to 100 marks. Final test marks will be reduced to **40 MARKS**	
Test – II		
EXPERIENTIAL LEARNING	**40**	
MATLAB	**20**	
Model presentation/ case study/ video preparation	**20**	
MAXIMUM MARKS FOR THE THEORY	**100 MARKS**	**100 MARKS**

Semester: IV						
CIVIL ENGINEERING MATERIALS (Theory)						
Course Code	**:**	**21CV42**		**CIE**	**:**	**50 Marks**
Credits: L:T:P	**:**	**2:0:0**		**SEE**	**:**	**50 Marks**
Total Hours	**:**	**30L**		**SEE Duration**	**:**	**2.00 Hours**

UNIT-I	**06 Hrs**
Stones: Engineering Rock Classification, Physical properties of minerals, major rock forming minerals, occurrence and use of minerals. Introduction to major rock types (Igneous, sedimentary and metamorphic rocks); their genesis, classification and structures; Engineering properties of rocks, advantages and disadvantages of different rock types at constructions sites. Common building stones in India and its uses as per IS codal recommendations.	
UNIT-II	**06 Hrs**
Construction and demolition waste: Waste disposal, categories of waste, properties of C&D waste, waste utilization criteria, Recyclable and non-recyclable C&D waste, BIS codal provisions **Fibres:** Carbon fibres, CFRP, Polyfibres, Pre-shrug Carbon fibres, reinforced polymers and polyesters	
UNIT-III	**06 Hrs**
Timber: Classification of timber, qualities of good timber, common timbers used for building work, Types of plywood, Ply board, properties and applications. Bamboo as building material **Glass:** Types of glass and its engineering properties for use in construction	
UNIT-IV	**06 Hrs**
Metals: Types and properties of Iron and Steel – Manufacturing process of steel – Advantages of new alloy steels – Properties and advantages of aluminium and application. HYSD and TMT bars **Materials:** Clay products, ceramics –Refractories Fibre Textiles – Geosynthetics for Civil Engineering applications, Polymers in Civil Engineering, Bitumen, cutback and emulsion.	
UNIT-V	**06 Hrs**
Smart Construction Materials: Introduction, Shape memory alloys, Magnetostrictive Materials, Piezoelectric materials, Electro rheological and eclectrochromic materials- applications in civil engineering	

Course Outcomes: After completing the course, the students will be able to	
CO1:	Explain the properties of engineering materials
CO2:	Select suitable various types of engineering materials to be used in construction industry and utilization of construction and demolition waste.
CO3:	Examine the behaviour of various engineering materials in construction industry
CO4:	Illustrate the properties of Smart engineering materials and fibres in civil engineering

Reference Books	
1.	Engineering and General Geology – 2013 by Parbin Singh Publisher: S.K. Kataria & Sons; edition (2013) ISBN 10: 9350142678
2.	Engineering Materials 1:An Introduction to Properties, Applications and Design , 2018 by D.R.H. Jones (Author), Michael F. Ashby , Butterworth-Heinemann; 5 edition ISBN-10: 0081020511
3.	Engineering Materials – 2017 by Rangawala, Publisher: Charotar Publishing House Pvt. Ltd.; 43rd Edition edition ISBN-10: 9385039172
4.	Sateesg Gopi "Basic Civil Engineering" 2009 Pearson publication ISBN 9788131729885

ASSESSMENT AND EVALUATION PATTERN		
WEIGHTAGE	**50%**	**50%**
QUIZZES		
Quiz-I	Each quiz is evaluated for 10 marks adding up to **20 Marks.** Final quiz marks will be reduced to **10 Marks.**	*****
Quiz-I		
THEORY COURSE (Bloom's Taxonomy Levels: Remembering, Understanding, Applying, Analyzing, Evaluating, and Creating)		
Test – I	Each test will be conducted for 25 Marks adding upto 50 marks. Final test marks will be reduced to **20 MARKS**	*****
Test – II		
EXPERIENTIAL LEARNING	**20**	*****
Case Study-based Teaching-Learning	**5**	*****
Sector wise study & consolidation	**10**	
Video based seminar (4-5 minutes per student)	**5**	
MAXIMUM MARKS FOR THE THEORY	**50 MARKS**	**50MARKS**
PRACTICALS	-	-
TOTAL MARKS FOR THE COURSE	**50**	**50**

IV Semester						
MECHANICS OF FLUIDS (Theory & Practice)						
Course Code	**:**	**21CV43**		**CIE**	**:**	**100 Marks + 50Marks**
Credits: L:T:P	**:**	**3:0:1**		**SEE**	**:**	**100 Marks + 50Marks**
Total Hours	**:**	**45L+30P**		**SEE Duration**	**:**	**3.00 Hours + 3.00 Hours**

Unit-I	**09 Hrs**
Introduction: Definition of properties and its usage for characterization of fluid, Numerical. **Fluid Pressure and its Measurement :** Fluid Pressure at a Point, Pascal's law, Variation of Pressure in a Fluid, Atmospheric Absolute, Gauge and Vacuum pressures, Measurement of pressure using Simple and Differential Manometers, Numerical**.**	
Unit – II	**09 Hrs**
Kinematics of Fluid Flow: Classification of flows: Steady and Unsteady, Uniform and Non-uniform, Laminar and Turbulent, Rotational and Irrotational flow. Rate of Flow/Discharge, Continuity equation (One Dimensional), Numerical. **Dynamics of Fluid Flow:** Introduction, Equations of Motion, Euler's Equation and Bernoulli's Equation, Modified Bernoulli's Equation - Limitations and its Application - Orifice Meter & Venturimeter, Numerical.	
Unit –III	**09 Hrs**
Flow through pipes: Head Losses - Major Loss & Minor Loss, Darcy - Weisbach Equation, Hydraulic Gradient Line, Total Energy Line, Series and Parallel Network of Pipes, Numerical. **Notches and Weirs:** Definition of Notch and Weir, Flow through V-notch, Rectangular weir, Cippoletti weir, Corrections for Velocity of Approach, End Contractions, Numerical.	
Unit –IV	**09 Hrs**
Flow through Open Channel: Calculation of Velocity using Chezy's and Manning's Experiments, Hydraulic Efficient Channels: Rectangular and Trapezoidal channel, Numerical. Specific Energy, Critical Depth, Froude's Number, Specific Energy Diagram, Subcritical and Supercritical flows, Alternative Depths, Hydraulic Jump, Numerical.	
Unit –V	**09 Hrs**
Impact of Jet on Vanes: Impact of Jet on Vanes, Force Exerted by the Jet on a Straight & Curved Vane (Stationary & Moving). Velocity Triangles, Numerical	

Laboratory
1. Calibration of 90^0 V-notch. 2. Calibration of Rectangular notch. 3. Calibration of Cippoletti notch. 4. Calibration of Ogee weir. 5. Calibration of Venturimeter. 6. Calibration of Orificemeter 7. Verification of Bernoulli's principle. 8. Determination of Friction Factor for a Given Pipe. 9. Impact of Jet on Vanes. 10. Minor Losses in Pipes (Bends in Pipe, Sudden Expansion in Pipe, Sudden Contraction in Pipe).

Course Outcomes: After completing the course, the students will be able to	
CO1:	Enunciate the Different Properties of Fluids, for the Flow Characterization and Measurements.
CO2:	Explicate the Behavior of the Fluids under Static and Dynamic Conditions.
CO3:	Relate Continuity Equation and Energy Equation in Solving Problems on Flow through Conduits.
CO4:	Evaluate Hydrostatic and Hydrodynamic Forces, Flow Profiles in Channel Transitions and Interpret Hydraulic Transients.

Reference Books	
1	Hydraulics and Fluid Mechanics including Hydraulic Machines, P.N. Modi and S.M Seth, 21st Edition 2017, Standard Book House, ISBN 978-81-89401-26-9.
2	A text book of Fluid Mechanics and Hydraulics Machines, Dr. R.K.Bansal, 10th Edition, 2018, Laxmi Publication (P) LTD, ISBN-10: 8131808157
3	Fluid Mechanics, 8th Edition 2016, Frank M White TATA McGraw Hill, New Delhi, ISBN-10: 9385965492, ISBN-13: 978-9385965494
4	Flow in open Channels, K. Subramanya, 5th Edition ,20 April 2019, Tata McGraw Hill, McGraw-Hill; ISBN-10: 9353166292
5	Fluid Mechanics with Engineering Applications, Daugherthy, R.L., Franzini, J.B., Finnemore, E.J., 1997, McGraw Hill, New York, ISBN-10: 9780070219144.
6	Fluid Mechanics, Streeter, V. L.,Wylie, E. Benjamin: 9th Edition, 2017, Tata McGraw Hill Publications., ISBN-10: 0070701407

ASSESSMENT AND EVALUATION PATTERN		
WEIGHTAGE	**50%**	**50%**
QUIZZES		
Quiz-I	Each quiz is evaluated for 10 marks adding up to **20 MARKS.**	*****
Quiz-I		
THEORY COURSE (Bloom's Taxonomy Levels: Remembering, Understanding, Applying, Analyzing, Evaluating, and Creating)		
Test – I	Each test will be conducted for 50 Marks adding upto 100 marks. Final test marks will be reduced to **40 MARKS**	*****
Test – II		
EXPERIENTIAL LEARNING	**40**	*****
Case Study-based Teaching-Learning	**10**	*****
Sector wise study & consolidation	**20**	
Video based seminar (4-5 minutes per student)	**10**	
MAXIMUM MARKS FOR THE THEORY	**100 MARKS**	**100 MARKS**
PRACTICALS	**50 MARKS**	**50 MARKS**
TOTAL MARKS FOR THE COURSE	**150**	**150**

Semester: IV						
BUILDING PLANNING AND DRAWING (Theory& Practice)						
Course Code	**:**	**21CV44**		**CIE**	**:**	**100 Marks+ 50Marks**
Credits: L: T:P		**3:0:1**		**SEE**	**:**	**100 Marks + 50Marks**
Total Hours	**:**	**45L+30P**		**SEE Duration**	**:**	**3.00 Hours + 3.00 Hours**

Unit-I	**10 Hrs**
Building systems: Foundations, Masonry, Walls, Floors, Stairs, Lintels and arches, Roofs, doors, windows, Ventilators – Classification and functional requirements.	
Unit – II	**10 Hrs**
Building Construction: Formwork and scaffolding, underpinning, Plastering, Pointing and painting, Weather proofing - concepts, Pre-cast construction – Classification and functional requirements,	
Unit –III	**10 Hrs**
Building services: Water distribution and drainage systems, principles, plans, materials, connections and services of connections, Air-conditioning, Acoustics, Fire protection and Harzards, Electrical drawing – Classification and functional requirements.,	
Unit –IV	**07 Hrs**
Building Planning: Principles of Building Planning, Classification of buildings and Building by laws as per National building Code. Introduction to Green buildings and rating systems	
Unit –V	**08 Hrs**
Construction equipment and safety: Introduction, Factors for selecting equipment, various earth moving equipment's, Hoisting equipment's Concrete mixer and plants, Conveyors and rollers, Trenching machines. Safety in construction Necessity and types of Personal protective equipment	
Laboratory	
Introduction to Building drawing – universal signs and symbols, line types, scale, building elements; Building floor plans, elevations and sections, vocabulary based on building drawing; **Using Auto-CAD 2D/ 3D /REVIT/ SKETCHUP 3D:** **Prepare working drawing of components of building like** Substructure - types of foundation, footing layouts, marking drawings; **Development of Plan, Elevation, section and Schedule of Openings for the following.** Single Storey building, Two Storey building. (With or without line diagram) Plumbing, sanitary layouts, electrical layouts.	

Course Outcomes: After completing the course, the students will be able to	
CO1:	Understand the fundamental of building materials, Planning, construction & factors of deterioration.
CO2:	Elaborate and visualize the common Civil engineering structural components.
CO3:	Familiarize with the critical aspects of various services in building
CO4:	Understand the essence of a civil engineer in the concept of building planning & drawings.

Reference Books	
1	Balagopal T S, Prabhu K, Vincent P and Vijayan C, Building Drawing and Detailing, Spades Publishers (1987).
2	Shah M G, Kale C M and Patki S Y, Building drawing with an integrated approach to built environment – 4th Edition, Tata McGraw Hill (2002).
3	Building Construction, S.G. Rangwala, 33rd Edition, 2016, Charotar Publishing House Pvt. Ltd.; ISBN-10: 9385039040
4	Building Construction B.C. Punmia , Ashok Kumar Jain , Arun Kumar Jain, 11th Edition, 2016, Laxmi Publications; ISBN-10: 9788131804285
5	Building Planning and Drawing , S. S. Bhavikatti, 30 June 2014, I K International Publishing House Pvt. Ltd, ISBN-13: 978-9382332565
6	Building Construction, Sushil Kumar 20th Edition, 2017, Standard publisher dist. ISBN-10: 9788180141683
7	National Building Code of India 2016 (NBC 2016)

ASSESSMENT AND EVALUATION PATTERN		
WEIGHTAGE	**50%**	**50%**
QUIZZES		
Quiz-I	Each quiz is evaluated for 10 marks adding up to **20 MARKS.**	*****
Quiz-I		
THEORY COURSE (Bloom's Taxonomy Levels: Remembering, Understanding, Applying, Analyzing, Evaluating, and Creating)		
Test – I	Each test will be conducted for 50 Marks adding upto 100 marks. Final test marks will be reduced to **40 MARKS**	*****
Test – II		
EXPERIENTIAL LEARNING	**40**	*****
Case Study-based Teaching-Learning	**10**	*****
Sector wise study & consolidation	**20**	
Video based seminar (4-5 minutes per student)	**10**	
MAXIMUM MARKS FOR THE THEORY	**100 MARKS**	**100 MARKS**
PRACTICALS	**50 MARKS**	**50 MARKS**
TOTAL MARKS FOR THE COURSE	**150**	**150**

Semester: IV						
Structural Analysis (Theory)						
Course Code	**:**	**21CV45**		**CIE**	**:**	**100 Marks**
Credits: L:T:P	**:**	**3:1:0**		**SEE**	**:**	**100 Marks**
Total Hours	**:**	**45L+15T**		**SEE Duration**	**:**	**3.00 Hours**

Unit-I	**08 Hrs**
Structural Systems: Forms of Structures**,** Conditions of equilibrium, Degrees of Freedom. Linear and Non-Linear Structures, 1D, 2D and 3D, Structures. Determinate & Indeterminate Structures, Static and Kinematical indeterminacy. **Analysis of Plane Trusses:** Introduction, Assumptions, Analysis of determinate trusses by Method of Joints and Method of sections.	
Unit – II	**9Hrs**
Deflection of Beams: Conjugate beam Method – Simply supported beams, Cantilever Beam, and Over hanging beams. **Energy Theorems: Introduction:** Strain energy in linear elastic system, expression of strain energy due to axial load, bending moment and shear force – Principle of virtual work, unit load method, Castigliano's theorems-Deflection of simple beams.	
Unit –III	**10Hrs**
Redundant Trusses: Introduction, Analysis of statically indeterminate structures using strain energy method, Analysis of trusses (Redundant up to second degree), Lack of fit in member & temperature stress in redundant truss. **Rolling loads and influence lines:** Rolling load analysis for simply supported beams (No overhanging beams), for the case of several point loads and UDL, Influence line diagrams for reactions, Shear forces and Bending moments at a given section for simply supported beams (No overhanging beams).	
Unit –IV	**10 Hrs**
Slope Deflection Method: Introduction; Derivation of Slope-Deflection equations for beams. Analysis of Continuous beam by Slope –Deflection Equations. (No portal frames) **Moment – Distribution Method:** Introduction, Stiffness factor, Distribution Factor, Distribution moment and Carry-over moment; Analysis of Continuous beams with and without settlement of supports. Single bay, Single storey, Orthogonal Portal frames with and without sway.	
Unit –V	**8 Hrs**
Arches: Introduction**,** Three Hinged Parabolic and circular Arches with supports at Same levels and different levels**,** Determination of Normal thrust, Radial Shear and bending moment - Problems. **Cables and Suspension Bridges**: Analysis of Cables at Same levels with point load and UDL– Numerical problems.	

Course Outcomes: After completing the course, the students will be able to	
CO1:	
CO2:	Apply the concepts of structural analysis to evaluate the response of structural elements.
CO3:	Analyze the different forms of structural elements by suitable methods of analysis.
CO4:	Study the behavior of structures under static and moving loads.

Reference Books	
1	Basic Structural Analysis, Reddy C.S., 3rd Edition, 1 July 2017, Tata McGraw Hill Publication Company Ltd., New Delhi, ISBN 13: 978-0070702769.
2	Theory of Structures, S. Ramamrutham, 9th Edition ,2014, DhanpatRai Publishing Company Private Limited, New Delhi; ISBN-13: 978-9384378103.
3	Basic Structural Analysis, K.U. Muthu , Azmi Ibrahim , M. Vijayanand , Maganti Janardhana, 3rd edition, 2017, I K International Publishing House Pvt. Ltd, ISBN-13 : 978-9385909573
4	Structural Analysis, R C Hibbler, 8th Edition, 25 February 2011, Pearson Publications; Pearson Prentice Hall, ISBN-13: 978-0132570534.
5	Elementary Structural Analysis, Norris C.H., Wilbur J.B.,3rd Edition, 2016, McGraw Hill Internationa12l Book, ISBN 13: 9352604717

ASSESSMENT AND EVALUATION PATTERN		
WEIGHTAGE	**50%**	**50%**
QUIZZES		
Quiz-I	Each quiz is evaluated for 10 marks adding up to **20 MARKS.**	*****
Quiz-I		
THEORY COURSE (Bloom's Taxonomy Levels: Remembering, Understanding, Applying, Analyzing, Evaluating, and Creating)		
Test – I	Each test will be conducted for 50 Marks adding upto 100 marks. Final test marks will be reduced to **40 MARKS**	*****
Test – II		
EXPERIENTIAL LEARNING	**40**	*****
Case Study-based Teaching-Learning	**10**	*****
Sector wise study & consolidation	**20**	
Video based seminar (4-5 minutes per student)	**10**	
MAXIMUM MARKS FOR THE THEORY	**100 MARKS**	**100 MARKS**

Semester: IV						
Digital Land Surveying And Mapping (DLS&M) (MOOC Course)						
Course Code	**:**	**21CV4A1**		**CIE**	**:**	**50 Marks**
Credits: L:T:P	**:**	**2:0:0**		**SEE**	**:**	**50 Marks**
Total Hours	**:**	**30L**		**SEE Duration**	**:**	**3.00 Hours**

Content	**30 Hrs**
The objective of the course is to provide basics of digital surveying and mapping of earth surface using total station, GPS and mapping software. The course starts with introduction to land surveying followed by fundamentals of total station and its working & measurements for land surveying. Then, fundamentals, working & measurements using GPS for land surveying will be discussed. Followed by mapping fundamentals, digital surveying procedure, working, data reduction etc. Finally, the course will deals with working and demonstration of a digital land surveying and mapping of an area. This course will uncover all the major topics in pericyclic reactions and organic photochemistry. In addition to lectures there will be tutorial sessions and assignments in this course.	

Semester: IV						
Construction Methods And Equipment Management (MOOC Course)						
Course Code	**:**	**21CV4A2**		**CIE**	**:**	**50 Marks**
Credits: L:T:P	**:**	**2:0:0**		**SEE**	**:**	**50 Marks**
Total Hours	**:**	**30L**		**SEE Duration**	**:**	**3.00 Hours**

Content	**30 Hrs**
The key element for successful execution of any project is planning, which also includes planning of equipment. Due to recent advancement in mechanization, different models of machines are available in the market for a particular job. Hence the task of selection of right machine for the right job is quite challenging for project planner. Therefore, understanding of machine capabilities is very important for optimal selection and utilization of equipment. This course provides comprehensive information on guidelines for selection of equipment, estimation of cost and productivity of various equipment and determination of optimum replacement time of equipment. Knowledge on estimation of cost of equipment is very important, as accurate information on equipment cost is needed for preparation of bids. Further, a deep insight into excavation, pile driving methods, cranes and concreting equipment is provided, the information on which is very much essential for people working in construction industry.	

Semester: IV						
Safety in Construction (MOOC Course)						
Course Code	**:**	**21CV4A3**		**CIE**	**:**	**50 Marks**
Credits: L:T:P	**:**	**2:0:0**		**SEE**	**:**	**50 Marks**
Total Hours	**:**	**30L**		**SEE Duration**	**:**	**3.00 Hours**

Content	**30 Hrs**
This course aims to make the students well-versed with the latest safety and health regulations and the Indian Standards applicable to the construction industry. At the end of this course, the students will be able to plan, assess, analyze and manage the hazardous construction project sites. Basic terminology in safety, types of injuries, safety pyramid, Accident patterns, theories of accident-causation Planning for safety budget, safety culture ,Introduction to OSHA regulations; Role of stakeholders in safety Site safety programs - Job hazard analysis, accident investigation & accident indices-violation, Penalty, Safety during construction, alteration, demolition works - Earthwork, steel construction, temporary structures, masonry & concrete construction, cutting & welding SoPs (Safe Operating Procedures) - Construction equipment, materials handling-disposal & hand tools Other hazards - fire, confined spaces, electrical safety; BIM & safety.	

Semester: IV						
Infrastructure Economics (MOOC Course)						
Course Code	**:**	**21CV4A4**		**CIE**	**:**	**50 Marks**
Credits: L:T:P	**:**	**2:0:0**		**SEE**	**:**	**50 Marks**
Total Hours	**:**	**30L**		**SEE Duration**	**:**	**3.00 Hours**

Content	**30 Hrs**
This course is designed to introduce the role of infrastructure in economic growth. The broad view of physical as well as social infrastructure will be dealt in depth which will be helpful for the students at UG level and also for the M.Tech students in Civil and Engineering, researchers at various infrastructure firms and Non-Governmental organization in social sector. Economics and Infrastructure, Finance for Infrastructure, Infrastructure and Economic Growth, Challenges for Infrastructure Development, Economic Model for Infrastructure Development, Infrastructure in an Open Economy, Infrastructure Development in India, A Comparison of Infrastructure in India with world.	

Semester: IV						
Introduction to Accounting and Finance for Civil Engineers (MOOC Course)						
Course Code	**:**	**21CV4A5**		**CIE**	**:**	**50 Marks**
Credits: L:T:P	**:**	**2:0:0**		**SEE**	**:**	**50 Marks**
Total Hours	**:**	**30L**		**SEE Duration**	**:**	**3.00 Hours**

Content	**30 Hrs**
With the changing paradigm of the construction industry, and introduction of different contracting models, with the government trying to play more of a regulatory role and withdrawing from financial commitments, and the space being occupied by financial institutions, civil engineers in the modern day are expected to be familiar with basic accounting and finance. This aspect is almost completely missing from any curriculum in civil engineering and hence there is a need to make relevant material available in an online course, which students and practicing engineers can refer to at their convenience. Regular assignments and a final test will also be uploaded along with solutions as may be required.	

BE - III / IV Semester – Common to All

ಬಳಕೆ ಕನ್ನಡ - baLake Kannada (Kannada for Usage)

ಕನ್ನಡ ಕಲಿಕೆಗಾಗಿ ನಿಗದಿಪಡಿಸಿದ ಪಠ್ಯಪುಸ್ತಕ - (Prescribed Textbook to Learn Kannada)

ವಿಷಯ ಸಂಕೇತ (Course Code)	21KBK39/49	ನಿರಂತರ ಆಂತರಿಕ ಮೌಲ್ಯಮಾಪನದ ಅಂಕಗಳು (Continuous Internal Evaluation Marks)	50
ಒಂದು ವಾರಕ್ಕೆ ಬೋಧನಾ ಅವಧಿ (Teaching Hours / Week (L:T:P: S)	0:2:0:1	ಸೆಮಿಸ್ಟರ್ ಅಂತ್ಯದ ಪರೀಕ್ಷೆಯ ಅಂಕಗಳು (Semester End Examination Marks)	50
ಒಟ್ಟು ಬೋಧನಾ ಅವಧಿ Total Hours of Pedagogy	25 ಗಂಟೆಗಳು	ಒಟ್ಟು ಅಂಕಗಳು (Total Marks)	100
ಕ್ರೆಡಿಟ್ಸ್ (Credits)	01	ಪರೀಕ್ಷೆಯ ಅವಧಿ (Exam Hours)	01 ಗಂಟೆ

ಬಳಕೆ ಕನ್ನಡ ಪಠ್ಯದ ಕಲಿಕೆಯ ಉದ್ದೇಶಗಳು (Course Learning Objectives):

- To Create the awareness regarding the necessity of learning local language for comfortable and healthy life.
- To enable learners to Listen and understand the Kannada language properly.
- To speak, read and write Kannada language as per requirement.
- To train the learners for correct and polite conservation.

ಬೋಧನೆ ಮತ್ತು ಕಲಿಕಾ ವ್ಯವಸ್ಥೆ (Teaching-Learning Process - General Instructions) :

These are sample Strategies, which teacher can use to accelerate the attainment of the various course outcomes.

1. ಬಳಕೆ ಕನ್ನಡವನ್ನು ತರಗತಿಯಲ್ಲಿ ಶಿಕ್ಷಕರು ಬೋಧಿಸಲು ವಿಟಿಯು ಸೂಚಿಸಿರುವ ಪಠ್ಯಪುಸ್ತಕವನ್ನು ಉಪಯೋಗಿಸಬೇಕು.
2. ಪ್ರಮುಖ ಅಂಶಗಳ ಚಾರ್ಟ್ ಗಳನ್ನು ತಯಾರಿಸಲು ವಿದ್ಯಾರ್ಥಿಗಳನ್ನು ಉತ್ತೇಜಿಸುವುದು ಮತ್ತು ತರಗತಿಯಲ್ಲಿ ಅವುಗಳನ್ನು ಚರ್ಚಿಸಲು ಅವಕಾಶ ಮಾಡಿಕೊಡುವುದು.
3. ಪ್ರತಿ ವಿದ್ಯಾರ್ಥಿ ಪುಸ್ತಕವನ್ನು ತರಗತಿಯಲ್ಲಿ ಬಳಸುವಂತೆ ನೋಡಿಕೊಳ್ಳುವುದು ಮತ್ತು ಪ್ರತಿ ಪಾಠ ಮತ್ತು ಪ್ರವಚನಗಳ ಮೂಲ ಅಂಶಗಳಿಗೆ ಸಂಬಂಧಪಟ್ಟಂತೆ ಪೂರಕ ಚಟುವಟಿಕೆಗಳಿಗೆ ತೊಡಗಿಸತಕ್ಕದ್ದು.
1. ಡಿಜಿಟಲ್ ತಂತ್ರಜ್ಞಾನದ ಮುಖಾಂತರ ಇತ್ತೀಚೆಗೆ ಡಿಜಿಟಲೀಕರಣ ಗೊಂಡಿರುವ ಭಾಷೆ ಕಲಿಕೆಯ ವಿಧಾನಗಳನ್ನು ಪಿಪಿಟಿ ಮತ್ತು ದೃಶ್ಯ ಮಾಧ್ಯಮದ ಮುಖಾಂತರ ಚರ್ಚಿಸಲು ಕ್ರಮಕೈಗೊಳ್ಳುವುದು. ಇದರಿಂದ ವಿದ್ಯಾರ್ಥಿಗಳನ್ನು ತರಗತಿಯಲ್ಲಿ ಹೆಚ್ಚು ಏಕಾಗ್ರತೆಯಿಂದ ಪಾಠ ಕೇಳಲು ಮತ್ತು ಅಧ್ಯಯನದಲ್ಲಿ ತೊಡಗಲು ಅನುಕೂಲವಾಗುತ್ತದೆ.
2. ಭಾಷಾಕಲಿಕೆಯ ಪ್ರಯೋಗಾಲಯದ ಮುಖಾಂತರ ಬಹುಬೇಗ ಕನ್ನಡ ಭಾಷೆಯನ್ನು ಕಲಿಯಲು ಅನುಕೂಲವಾಗುವಂತೆ ಕಾರ್ಯಚಟುವಟಿಕೆಗಳನ್ನು ಮತ್ತು ಕ್ರಿಯಾ ಯೋಜನೆಗಳನ್ನು ರೂಪಿಸುವುದು.

Module-1

1. Introduction, Necessity of learning a local language. Methods to learn the Kannada language.
2. Easy learning of a Kannada Language: A few tips. Hints for correct and polite conservation, Listening and Speaking Activities
3. Key to Transcription.
4. ವೈಯಕ್ತಿಕ, ಸ್ವಾಮ್ಯಸೂಚಕ/ಸಂಬಂಧಿತ ಸಾರ್ವನಾಮಗಳು ಮತ್ತು ಪ್ರಶ್ನಾರ್ಥಕ ಪದಗಳು - **Personal Pronouns, Possessive Forms, Interrogative words**

ಬೋಧನೆ ಮತ್ತು ಕಲಿಕಾ ವಿಧಾನ	ಪುಸ್ತಕ ಆಧಾರಿತ ಬ್ಲಾಕ್ ಬೋರ್ಡ್ ವಿಧಾನ, ಪ್ರಮುಖ ಅಂಶಗಳ ಚಾರ್ಟ್ ಗಳನ್ನು ಬಳಸುವುದು, ಪಿಪಿಟಿ ಮತ್ತು ದೃಶ್ಯ ಮಾಧ್ಯಮದ ವಿಡಿಯೋಗಳನ್ನು ಬಳಸುವುದು, ವಿದ್ಯಾರ್ಥಿಗಳೊಂದಿಗೆ ಚಟುವಟಿಕೆಗಳ ಮುಖಾಂತರ ಚರ್ಚಿಸುವುದು.

Module-2

1. ನಾಮಪದಗಳ ಸಂಬಂಧಾರ್ಥಕ ರೂಪಗಳು, ಸಂದೇಹಾಸ್ಪದ ಪ್ರಶ್ನೆಗಳು ಮತ್ತು ಸಂಬಂಧವಾಚಕ ನಾಮಪದಗಳು - **Possessive forms of nouns, dubitive question and Relative nouns**
2. ಗುಣ, ಪರಿಮಾಣ ಮತ್ತು ವರ್ಣಬಣ್ಣ ವಿಶೇಷಣಗಳು, ಸಂಖ್ಯಾವಾಚಕಗಳು **Qualitative, Quantitative and Colour Adjectives, Numerals**
3. **ಕಾರಕ ರೂಪಗಳು ಮತ್ತು ವಿಭಕ್ತಿ ಪ್ರತ್ಯಯಗಳು – ಸಪ್ತಮಿ ವಿಭಕ್ತಿ ಪ್ರತ್ಯಯ – (ಅ, ಅದು, ಅವು, ಅಲ್ಲಿ) Predictive Forms, Locative Case**

ಬೋಧನೆ ಮತ್ತು ಕಲಿಕಾ ವಿಧಾನ	ಪುಸ್ತಕ ಆಧಾರಿತ ಬ್ಲಾಕ್ ಬೋರ್ಡ್ ವಿಧಾನ, ಪ್ರಮುಖ ಅಂಶಗಳ ಚಾರ್ಟ್ ಗಳನ್ನು ಬಳಸುವುದು, ಪಿಪಿಟಿ ಮತ್ತು ದೃಶ್ಯ ಮಾಧ್ಯಮದ ವಿಡಿಯೋಗಳನ್ನು ಬಳಸುವುದು, ವಿದ್ಯಾರ್ಥಿಗಳೊಂದಿಗೆ ಚಟುವಟಿಕೆಗಳ ಮುಖಾಂತರ ಚರ್ಚಿಸುವುದು.

Module-3

1. **ಚತುರ್ಥಿ ವಿಭಕ್ತಿ ಪ್ರತ್ಯಯದ ಬಳಕೆ ಮತ್ತು ಸಂಖ್ಯಾವಾಚಕಗಳು – Dative Cases, and Numerals**
4. **ಸಂಖ್ಯಾಗುಣವಾಚಕಗಳು ಮತ್ತು ಬಹುವಚನ ನಾಮರೂಪಗಳು – Ordinal numerals and Plural markers**
5. **ನ್ಯೂನ / ನಿಷೇಧಾರ್ಥಕ ಕ್ರಿಯಾಪದಗಳು ಮತ್ತು ವರ್ಣ ಗುಣವಾಚಕಗಳು Defective / Negative Verbs and Colour Adjectives**

ಬೋಧನೆ ಮತ್ತು ಕಲಿಕಾ ವಿಧಾನ	ಪುಸ್ತಕ ಆಧಾರಿತ ಬ್ಲಾಕ್ ಬೋರ್ಡ್ ವಿಧಾನ, ಪ್ರಮುಖ ಅಂಶಗಳ ಚಾರ್ಟ್ ಗಳನ್ನು ಬಳಸುವುದು, ಪಿಪಿಟಿ ಮತ್ತು ದೃಶ್ಯ ಮಾಧ್ಯಮದ ವಿಡಿಯೋಗಳನ್ನು ಬಳಸುವುದು, ವಿದ್ಯಾರ್ಥಿಗಳೊಂದಿಗೆ ಚಟುವಟಿಕೆಗಳ ಮುಖಾಂತರ ಚರ್ಚಿಸುವುದು.

Module-4

1 ಅಪ್ಪಣೆ / ಒಪ್ಪಿಗೆ, ನಿರ್ದೇಶನ, ಪ್ರೋತ್ಸಾಹ ಮತು ಒತ್ತಾಯ ಆರ್ಥರೂಪ ಪದಗಳು ಮತ್ತು ವಾಕ್ಯಗಳು
Permission, Commands, encouraging and Urging words (Imperative words and sentences)

2. ಸಾಮಾನ್ಯ ಸಂಭಾಷಣೆಗಳಲ್ಲಿ ದ್ವಿತೀಯ ವಿಭಕ್ತಿ ಪ್ರತ್ಯಯಗಳು ಮತ್ತು ಸಂಭವನೀಯ ಪ್ರಕಾರಗಳು
Accusative Cases and Potential Forms used in General Communication

3. "ಇರು ಮತ್ತು ಇರಲ್ಲ" ಸಹಾಯಕ ಕ್ರಿಯಾಪದಗಳು, ಸಂಭಾವ್ಯಸೂಚಕ ಮತ್ತು ನಿಷೇಧಾರ್ಥಕ ಕ್ರಿಯಾ ಪದಗಳು - Helping Verbs "iru and iralla", Corresponding Future and Negation Verbs
6. ಹೋಲಿಕೆ (ತರತಮ) , ಸಂಬಂಧ ಸೂಚಕ ಮತ್ತು ವಸ್ತು ಸೂಚಕ ಪ್ರತ್ಯಯಗಳು ಮತ್ತು ನಿಷೇಧಾರ್ಥಕ ಪದಗಳ ಬಳಕೆ- Comparitive, Relationship, Identification and Negation Words

ಬೋಧನೆ ಮತ್ತು ಕಲಿಕಾ ವಿಧಾನ	ಪುಸ್ತಕ ಆಧಾರಿತ ಬ್ಲಾಕ್ ಬೋರ್ಡ್ ವಿಧಾನ, ಪ್ರಮುಖ ಅಂಶಗಳ ಚಾರ್ಟ್ ಗಳನ್ನು ಬಳಸುವುದು, ಪಿಪಿಟಿ ಮತ್ತು ದೃಶ್ಯ ಮಾಧ್ಯಮದ ವಿಡಿಯೋಗಳನ್ನು ಬಳಸುವುದು, ವಿದ್ಯಾರ್ಥಿಗಳೊಂದಿಗೆ ಚಟುವಟಿಕೆಗಳ ಮುಖಾಂತರ ಚರ್ಚಿಸುವುದು.

Module-5

1. ಕಾಲ ಮತ್ತು ಸಮಯದ ಹಾಗೂ ಕ್ರಿಯಾಪದಗಳ ವಿವಿಧ ಪ್ರಕಾರಗಳು - ifferent types of forms of Tense, Time and Verbs
2. ದ್, -ತ್, - ತು, - ಇತು, - ಆಗಿ, - ಅಲ್ಲ, - ಗ್, -ಕ್, ಇದೆ, ಕ್ರಿಯಾ ಪ್ರತ್ಯಯಗಳೊಂದಿಗೆ ಭೂತ, ಭವಿಷ್ಯತ್ ಮತ್ತು ವರ್ತಮಾನ ಕಾಲ ವಾಕ್ಯ ರಚನೆ - Formation of Past, Future and Present Tense Sentences with Verb Forms
3. **Kannada Vocabulary List :** ಸಂಭಾಷಣೆಯಲ್ಲಿ ದಿನೋಪಯೋಗಿ ಕನ್ನಡ ಪದಗಳು - **Kannada Words in Conversation**

ಬೋಧನೆ ಮತ್ತು ಕಲಿಕಾ ವಿಧಾನ	ಪುಸ್ತಕ ಆಧಾರಿತ ಬ್ಲಾಕ್ ಬೋರ್ಡ್ ವಿಧಾನ, ಪ್ರಮುಖ ಅಂಶಗಳ ಚಾರ್ಟ್ ಗಳನ್ನು ಬಳಸುವುದು, ಪಿಪಿಟಿ ಮತ್ತು ದೃಶ್ಯ ಮಾಧ್ಯಮದ ವಿಡಿಯೋಗಳನ್ನು ಬಳಸುವುದು, ವಿದ್ಯಾರ್ಥಿಗಳೊಂದಿಗೆ ಚಟುವಟಿಕೆಗಳ ಮುಖಾಂತರ ಚರ್ಚಿಸುವುದು.

ಬಳಕೆ ಕನ್ನಡ ಪಠ್ಯದ ಕಲಿಕೆಯಿಂದ ವಿದ್ಯಾರ್ಥಿಗಳಿಗೆ ಆಗುವ ಅನುಕೂಲಗಳು ಮತ್ತು ಫಲಿತಾಂಶಗಳು: **course Outcomes (Course Skill** Set): At the end of the Course, The Students will be able

1. To understand the necessity of learning of local language for comfortable life.
2. To Listen and understand the Kannada language properly.
3. To speak, read and write Kannada language as per requirement.
4. To communicate (converse) in Kannada language in their daily life with kannada speakers.
5. To speak in polite conservation.

Assessment Details (both CIE and SEE)

The weightage of Continuous Internal Evaluation (CIE) is 50% and for Semester End Exam (SEE) is 50%. The minimum passing mark for the CIE is 40% of the maximum marks (20 marks). A student shall be deemed to have satisfied the academic requirements and earned the credits allotted to each subject/ course if the student secures not less than 35% (18 Marks out of 50)in the semester-end examination(SEE), and a minimum of 40% (40 marks out of 100) in the sum total of the CIE (Continuous Internal Evaluation) and SEE (Semester End Examination) taken together

Continuous Internal Evaluation:

Three Tests each of **20 Marks (duration 01 hour**)

a. First test at the end of 5th week of the semester
b. Second test at the end of the 10th week of the semester
c. Third test at the end of the 15th week of the semester

Two assignments each of **10 Marks : 1.** First assignment at the end of 4th week of the semester

7. Second assignment at the end of 9th week of the semester

Group discussion/Seminar/quiz any one of three suitably planned to attain the COs and POs for **20 Marks** (**duration 01 hours**)

8. At the end of the 13th week of the semester

The sum of three tests, two assignments, and quiz/seminar/group discussion will be out of 100 marks and will be **scaled down to 50 marks**

CIE methods /question paper is designed to attain the different levels of Bloom's taxonomy as per the outcome defined for the course.

ಸೆಮಿಸ್ಟರ್ ಅಂತ್ಯದ ಪರೀಕ್ಷೆಯು ಈ ಕೆಳಗಿನಂತಿರುತ್ತದೆ - **Semester End Exam (SEE):**

SEE will be conducted by University as per the scheduled timetable, with common question papers for the subject.

2. The question paper will have 50 questions. Each question is set for 01 mark.
3. SEE Pattern will be in MCQ Model for 50 marks. Duration of the exam is 01 Hour.

Textbook :

ಬಳಕೆ ಕನ್ನಡ

ಲೇಖಕರು : ಡಾ. ಎಲ್. ತಿಮ್ಮೇಶ

ಪ್ರಸಾರಾಂಗ, ವಿಶ್ವೇಶ್ವರಯ್ಯ ತಾಂತ್ರಿಕ ವಿಶ್ವವಿದ್ಯಾಲಯ, ಬೆಳಗಾವಿ.

BE - **III/IV Semester – Common to all**

ಸಾಂಸ್ಕೃತಿಕ ಕನ್ನಡ

ವಿಷಯ ಸಂಕೇತ (Course Code)	21KSK39/49	ನಿರಂತರ ಆಂತರಿಕ ಮೌಲ್ಯಮಾಪನದ ಅಂಕಗಳು	50
ಒಂದು ವಾರಕ್ಕೆ ಬೋಧನಾ ಅವಧಿ (Teaching Hours / Week (L:T:P: S)	0:2:0:1	ಸೆಮಿಸ್ಟರ್ ಅಂತ್ಯದ ಪರೀಕ್ಷೆಯ ಅಂಕಗಳು	50
ಒಟ್ಟು ಬೋಧನಾ ಅವಧಿ Total Hours of Pedagogy	25 ಗಂಟೆಗಳು	ಒಟ್ಟು ಅಂಕಗಳು	100
ಕ್ರೆಡಿಟ್ಸ್ (Credits)	01	ಪರೀಕ್ಷೆಯ ಅವಧಿ	01 ಗಂಟೆ

ಸಾಂಸ್ಕೃತಿಕ ಕನ್ನಡ ಪಠ್ಯದ ಕಲಿಕೆಯ ಉದ್ದೇಶಗಳು:

1. ವೃತ್ತಿಪರ ಪದವಿ ವಿದ್ಯಾರ್ಥಿಗಳಾಗಿರುವುದರಿಂದ ಕನ್ನಡ ಭಾಷೆ, ಸಾಹಿತ್ಯ ಮತ್ತು ಕನ್ನಡದ ಸಂಸ್ಕೃತಿಯ ಪರಿಚಯ ಮಾಡಿಕೊಡುವುದು.
2. ಕನ್ನಡ ಸಾಹಿತ್ಯದ ಪ್ರಧಾನ ಭಾಗವಾದ ಆಧುನಿಕ ಪೂರ್ವ ಮತ್ತು ಆಧುನಿಕ ಕಾವ್ಯಗಳನ್ನು ಸಾಂಕೇತಿಕವಾಗಿ ಪರಿಚಯಿಸಿ ವಿದ್ಯಾರ್ಥಿಗಳಲ್ಲಿ ಸಾಹಿತ್ಯ ಮತ್ತು ಸಂಸ್ಕೃತಿಯ ಬಗ್ಗೆ ಅರಿವು ಹಾಗೂ ಆಸಕ್ತಿಯನ್ನು ಮೂಡಿಸುವುದು.
3. ತಾಂತ್ರಿಕ ವ್ಯಕ್ತಿಗಳ ಪರಿಚಯವನ್ನು ಹಾಗೂ ಅವರುಗಳ ಸಾಧಿಸಿದ ವಿಷಯಗಳನ್ನು ಪರಿಚಯಿಸುವುದು.
4. ಕನ್ನಡ ಶಬ್ದಸಂಪತ್ತಿನ ಪರಿಚಯ ಮತ್ತು ಕನ್ನಡ ಭಾಷೆಯ ಬಳಕೆ ಹಾಗೂ ಕನ್ನಡದಲ್ಲಿ ಪತ್ರ ವ್ಯವಹಾರವನ್ನು ತಿಳಿಸಿಕೊಡುವುದು.

ಬೋಧನೆ ಮತ್ತು ಕಲಿಕಾ ವ್ಯವಸ್ಥೆ (Teaching-Learning Process - General Instructions) :

These are sample Strategies, which teacher can use to accelerate the attainment of the course outcomes.

1. ಸಾಂಸ್ಕೃತಿಕ ಕನ್ನಡವನ್ನು ಬೋಧಿಸಲು ತರಗತಿಯಲ್ಲಿ ಶಿಕ್ಷಕರು ಪ್ರಸ್ತುತ ಪುಸ್ತಕ ಆಧಾರಿಸಿ ಬ್ಲಾಕ್ ಬೋರ್ಡ್ ವಿಧಾನವನ್ನು ಅನುಸರಿಸುವುದು. ಪ್ರಮುಖ ಅಂಶಗಳ ಚಾರ್ಟ್ ಗಳನ್ನು ತಯಾರಿಸಲು ವಿದ್ಯಾರ್ಥಿಗಳನ್ನು ಪ್ರೇರೇಪಿಸುವುದು ಮತ್ತು ತರಗತಿಯಲ್ಲಿ ಅವುಗಳನ್ನು ಚರ್ಚಿಸಲು ಅವಕಾಶ ಮಾಡಿಕೊಡುವುದು.
2. ಇತ್ತೀಚಿನ ತಂತ್ರಜ್ಞಾನದ ಅನುಕೂಲಗಳನ್ನು ಬಳಸಿಕೊಳ್ಳುವುದು - ಅಂದರೆ ಕವಿ-ಕಾವ್ಯ ಪರಿಚಯದಲ್ಲಿ ಕವಿಗಳ ಚಿತ್ರಣ ಮತ್ತು ಲೇಖನಗಳು ಮತ್ತು ಕಥೆ ಕಾವ್ಯಗಳ ಮೂಲ ಅಂಶಗಳಿಗೆ ಸಂಬಂಧಪಟ್ಟ ಧ್ವನಿ ಚಿತ್ರಗಳು, ಸಂಭಾಷಣೆಗಳು, ಈಗಾಗಲೇ ಇತರ ವಿಮರ್ಶಕರು ಬರೆದಿರುವ ವಿಮರ್ಶಾತ್ಮಕ ವಿಷಯಗಳನ್ನು ಟಿಪಿಟಿ, ಡಿಜಿಟಲ್ ಮಾಧ್ಯಮಗಳ ಮುಖಾಂತರ ವಿಶ್ಲೇಷಿಸುವುದು.
3. ನವೀನ ಮಾದರಿಯ ಸಾಹಿತ್ಯ ಬೋಧನೆಗೆ ಸಂಬಂಧಪಟ್ಟ ವಿಧಾನಗಳನ್ನು ಶಿಕ್ಷಕರು ವಿದ್ಯಾರ್ಥಿಗಳಿಗೆ ಅನುಕೂಲವಾಗುವ ರೀತಿಯಲ್ಲಿ ಅಳವಡಿಸಿಕೊಳ್ಳಬಹುದು.

ಘಟಕ -1 ಲೇಖನಗಳು

1. ಕರ್ನಾಟಕ ಸಂಸ್ಕೃತಿ - ಹಂಪ ನಾಗರಾಜಯ್ಯ
2. ಕರ್ನಾಟಕದ ಏಕೀಕರಣ : ಒಂದು ಅಪೂರ್ವ ಚರಿತ್ರೆ - ಜಿ. ವೆಂಕಟಸುಬ್ಬಯ್ಯ
3. ಆಡಳಿತ ಭಾಷೆಯಾಗಿ ಕನ್ನಡ - ಡಾ. ಎಲ್. ತಿಮ್ಮೇಶ ಮತ್ತು ಪ್ರೋ. ವಿ. ಕೇಶವಮೂರ್ತಿ

ಬೋಧನೆ ಮತ್ತು ಕಲಿಕಾ ವಿಧಾನ	ಪುಸ್ತಕ ಆಧಾರಿತ ಬ್ಲಾಕ್ ಬೋರ್ಡ್ ವಿಧಾನ, ಪ್ರಮುಖ ಅಂಶಗಳ ಚಾರ್ಟ್ ಗಳನ್ನು ಬಳಸುವುದು, ಪಿಪಿಟಿ ಮತ್ತು ದೃಶ್ಯ ಮಾಧ್ಯಮದ ವಿಡಿಯೋಗಳನ್ನು ಬಳಸುವುದು, ವಿದ್ಯಾರ್ಥಿಗಳೊಂದಿಗೆ ಚಟುವಟಿಕೆಗಳ ಮುಖಾಂತರ ಚರ್ಚಿಸುವುದು.

ಘಟಕ -2 ಆಧುನಿಕ ಪೂರ್ವದ ಕಾವ್ಯ ಭಾಗ	
1. ವಚನಗಳು : ಬಸವಣ್ಣ, ಅಕ್ಕಮಹಾದೇವಿ, ಅಲ್ಲಮಪ್ರಭು, ಆಯ್ದಕ್ಕಿ ಮಾರಯ್ಯ, ಜೇಡರದಾಸಿಮಯ್ಯ, ಆಯ್ದಕ್ಕಿ ಲಕ್ಕಮ್ಮ. 2. ಕೀರ್ತನೆಗಳು : ಅದರಿಂದೇನು ಫಲ ಇದರಿಂದೇನು ಫಲ – ಪುರಂದರದಾಸರು ತಲ್ಲಣಿಸದಿರು ಕಂಡ್ಯ ತಾಳು ಮನವೇ – ಕನಕದಾಸರು 3. ತತ್ವಪದಗಳು : ಸಾವಿರ ಕೊಡಗಳ ಸುಟ್ಟು – ಶಿಶುನಾಳ ಶರೀಫ	
ಬೋಧನೆ ಮತ್ತು ಕಲಿಕಾ ವಿಧಾನ	ಪುಸ್ತಕ ಆಧಾರಿತ ಬ್ಲಾಕ್ ಬೋರ್ಡ್ ವಿಧಾನ, ಪ್ರಮುಖ ಅಂಶಗಳ ಚಾರ್ಟ್ ಗಳನ್ನು ಬಳಸುವುದು, ಪಿಪಿಟಿ ಮತ್ತು ದೃಶ್ಯ ಮಾಧ್ಯಮದ ವಿಡಿಯೋಗಳನ್ನು ಬಳಸುವುದು, ವಿದ್ಯಾರ್ಥಿಗಳೊಂದಿಗೆ ಚಟುವಟಿಕೆಗಳ ಮುಖಾಂತರ ಚರ್ಚಿಸುವುದು.
ಘಟಕ -3 ಆಧುನಿಕ ಕಾವ್ಯಭಾಗ	
1. ಡಿವಿಜಿ ರವರ ಮಂಕುತಿಮ್ಮನ ಕಗ್ಗದಿಂದ ಅಯ್ದ ಕೆಲವು ಭಾಗಗಳು 2. ಕುರುಡು ಕಾಂಚಾಣ : ದಾ.ರಾ. ಬೇಂದ್ರೆ 3. ಹೊಸಬಾಳಿನ ಗೀತೆ : ಕುವೆಂಪು	
ಬೋಧನೆ ಮತ್ತು ಕಲಿಕಾ ವಿಧಾನ	ಪುಸ್ತಕ ಆಧಾರಿತ ಬ್ಲಾಕ್ ಬೋರ್ಡ್ ವಿಧಾನ, ಪ್ರಮುಖ ಅಂಶಗಳ ಚಾರ್ಟ್ ಗಳನ್ನು ಬಳಸುವುದು, ಪಿಪಿಟಿ ಮತ್ತು ದೃಶ್ಯ ಮಾಧ್ಯಮದ ವಿಡಿಯೋಗಳನ್ನು ಬಳಸುವುದು, ವಿದ್ಯಾರ್ಥಿಗಳೊಂದಿಗೆ ಚಟುವಟಿಕೆಗಳ ಮುಖಾಂತರ ಚರ್ಚಿಸುವುದು.
ಘಟಕ -4 ತಾಂತ್ರಿಕ ವ್ಯಕ್ತಿಗಳ ಪರಿಚಯ	
1. ಡಾ. ಸರ್. ಎಂ. ವಿಶ್ವೇಶ್ವರಯ್ಯ : ವ್ಯಕ್ತಿ ಮತ್ತು ಐತಿಹ್ಯ - ಎ ಎನ್ ಮೂರ್ತಿರಾವ್ 2. ಕರಕುಶಲ ಕಲೆಗಳು ಮತ್ತು ಪರಂಪರೆಯ ವಿಜ್ಞಾನ : ಕರೀಗೌಡ ಬೀಚನಹಳ್ಳಿ	
ಬೋಧನೆ ಮತ್ತು ಕಲಿಕಾ ವಿಧಾನ	ಪುಸ್ತಕ ಆಧಾರಿತ ಬ್ಲಾಕ್ ಬೋರ್ಡ್ ವಿಧಾನ, ಪ್ರಮುಖ ಅಂಶಗಳ ಚಾರ್ಟ್ ಗಳನ್ನು ಬಳಸುವುದು, ಪಿಪಿಟಿ ಮತ್ತು ದೃಶ್ಯ ಮಾಧ್ಯಮದ ವಿಡಿಯೋಗಳನ್ನು ಬಳಸುವುದು, ವಿದ್ಯಾರ್ಥಿಗಳೊಂದಿಗೆ ಚಟುವಟಿಕೆಗಳ ಮುಖಾಂತರ ಚರ್ಚಿಸುವುದು.
ಘಟಕ -5 ಕಥೆ ಮತ್ತು ಪ್ರವಾಸ ಕಥನ	
1. ಯುಗಾದಿ : ವಸುಧೇಂದ್ರ 2. ಮೆಗಾನೆ ಎಂಬ ಗಿರಿಜನ ಪರ್ವತ : ಹಿ.ಚಿ. ಬೋರಲಿಂಗಯ್ಯ	
ಬೋಧನೆ ಮತ್ತು ಕಲಿಕಾ ವಿಧಾನ	ಪುಸ್ತಕ ಆಧಾರಿತ ಬ್ಲಾಕ್ ಬೋರ್ಡ್ ವಿಧಾನ, ಪ್ರಮುಖ ಅಂಶಗಳ ಚಾರ್ಟ್ ಗಳನ್ನು ಬಳಸುವುದು, ಪಿಪಿಟಿ ಮತ್ತು ದೃಶ್ಯ ಮಾಧ್ಯಮದ ವಿಡಿಯೋಗಳನ್ನು ಬಳಸುವುದು, ವಿದ್ಯಾರ್ಥಿಗಳೊಂದಿಗೆ ಚಟುವಟಿಕೆಗಳ ಮುಖಾಂತರ ಚರ್ಚಿಸುವುದು.

ಸಾಂಸ್ಕೃತಿಕ ಕನ್ನಡ ಕಲಿಕೆಯಿಂದ ವಿದ್ಯಾರ್ಥಿಗಳಿಗೆ ಆಗುವ ಪರಿಣಾಮಗಳು (course Outcomes):

1. ಕನ್ನಡ ಭಾಷೆ, ಸಾಹಿತ್ಯ ಮತ್ತು ಕನ್ನಡದ ಸಂಸ್ಕೃತಿಯ ಪರಿಚಯವಾಗುತ್ತದೆ.
2. ಕನ್ನಡ ಸಾಹಿತ್ಯದ ಆಧುನಿಕ ಪೂರ್ವ ಮತ್ತು ಆಧುನಿಕ ಕಾವ್ಯಗಳು ಮತ್ತು ಸಂಸ್ಕೃತಿಯ ಬಗ್ಗೆ ಆಸಕ್ತಿಯು ಮೂಡುತ್ತದೆ.
3. ತಾಂತ್ರಿಕ ವ್ಯಕ್ತಿಗಳ ಪರಿಚಯವಾಗುತ್ತದೆ.
4. ಕನ್ನಡ ಭಾಷಾಭ್ಯಾಸ, ಸಾಮಾನ್ಯ ಕನ್ನಡ ಹಾಗೂ ಆಡಳಿತ ಕನ್ನಡದ ಪದಗಳ ಪರಿಚಯವಾಗುತ್ತದೆ.

ಮೌಲ್ಯಮಾಪನದ ವಿಧಾನ (Assessment Details- both CIE and SEE) :

(methods of CIE - MCQ, Quizzes, Open book test, Seminar or micro project)
The weightage of Continuous Internal Evaluation (CIE) is 50% and for Semester End Exam (SEE) is 50%. The student has to obtain a minimum of 40% marks individually both in CIE and 35% marks in SEE to pass. Theory Semester End Exam (SEE) is conducted for 50 marks (01 hour duration). Based on this grading will be awarded.

Continuous Internal Evaluation:
Three Tests each of **20 Marks (duration 01 hour**)

a. First test at the end of 5th week of the semester
b. Second test at the end of the 10th week of the semester
c. Third test at the end of the 15th week of the semester

Two assignments each of **10 Marks : 1.** First assignment at the end of 4th week of the semester

2. Second assignment at the end of 9th week of the semester

Group discussion/Seminar/quiz any one of three suitably planned to attain the COs and POs for **20 Marks** (**duration 01 hours**)

3. At the end of the 13th week of the semester

The sum of three tests, two assignments, and quiz/seminar/group discussion will be out of 100 marks and will be **scaled down to 50 marks**
CIE methods /question paper is designed to attain the different levels of Bloom's taxonomy as per the outcome defined for the course.

ಸೆಮಿಸ್ಟರ್ ಅಂತ್ಯದ ಪರೀಕ್ಷೆಯು ಈ ಕೆಳಗಿನಂತಿರುತ್ತದೆ - Semester End Exam (SEE):

SEE will be conducted by University as per the scheduled timetable, with common question papers for the subject.

1. The question paper will have 50 questions. Each question is set for 01 mark.

SEE Pattern will be in MCQ Model for 50 marks. Duration of the exam is 01 Hour.

ಪಠ್ಯಪುಸ್ತಕ :

ಸಾಂಸ್ಕೃತಿಕ ಕನ್ನಡ

ಡಾ. ಹಿ.ಚಿ.ಬೋರಲಿಂಗಯ್ಯ ಮತ್ತು ಡಾ. ಎಲ್. ತಿಮ್ಮೇಶ,

ಪ್ರಸಾರಾಂಗ, ವಿಶ್ವೇಶ್ವರಯ್ಯ ತಾಂತ್ರಿಕ ವಿಶ್ವವಿದ್ಯಾಲಯ, ಬೆಳಗಾವಿ.

Semester: IV						
National Service Scheme (Practical)						
Course Code	**:**	**21HSAE46A**		**CIE**	**:**	**50 Marks**
Credits: L:T:P	**:**	**0:0:1**		**SEE**	**:**	**50 Marks**
Total Hours	**:**	**13P**		**SEE Duration**	**:**	**2.00 Hours**

Prerequisites:
1.Students should have service-oriented mindset and social concern.
2. Students should have dedication to work at any remote place, any time with available resources and proper time management for the other works.
3. Students should be ready to sacrifice some of the timely will and wishes to achieve service-oriented targets on time.

Content	**13 Hrs**
Students must take up any one activity on below mentioned topics and has to prepare contents for awareness and technical contents for implementation of the projects and has to present strategies for implementation of the same. Compulsorily must attend one camp. CIE will be evaluated based on their presentation, approach, and implementation strategies. (Any one of the below mentioned activity) 1. Helping local schools to achieve good result and enhance their enrolment in Higher/technical/ vocational education. 2. Preparing an actionable business proposal for enhancing the village/ farmer income and approach for implementation. 3. Developing Sustainable Water management system for rural/ urban areas and implementation approaches. 4. Setting of the information imparting club for women leading to contribution in social and economic issues. 5. Spreading public awareness/ government schemes under rural outreach program. (Minimum 5 programs) 6. Contribution to any national level initiative of Government of India. For eg. Digital India, Skill India, Swachh Bharat, Atmanirbhar Bharath, Make in India, Mudra scheme, Skill development programs etc.. 7.Social connect and responsibilities 8. Plantation and adoption of plants. Know your plants 9. Organic farming, Indian Agriculture (Past, Present and Future) Connectivity for marketing. 10. Waste management – Public, Private and Govt organization, 5 R's 11. Water conservation techniques – Role of different stakeholders – Implementation 12. Govt. School Rejuvenation and assistance to achieve good infrastructure. 13. Organize National integration and social harmony events/ workshops / seminars. (Minimum 2 programs) AND ONE NSS-CAMP.	

Course Outcomes: After completing the course, the students will be able to:-	
CO 1	Understand the importance of his/her responsibilities towards society.
CO 2	Analyze the environmental and societal problems/ issues and will be able to design solutions for the same.
CO 3	Evaluate the existing system and to propose practical solutions for the same for sustainable development.
CO 4	Implement government or self-driven projects effectively in the field.

ASSESSMENT AND EVALUATION PATTERN		
WEIGHTAGE	**50%**	**50%**
	CIE	**SEE**
Presentation 1- Selection of topic- (phase 1) Justification for Importance, need of the hour withsurveyed data.	**10**	*****
EXPERIENTIAL LEARNING Presentation 2 (phase 2) Content development, strategies for implementationmethodologies.	**10**	*****
Case Study-based Teaching-Learning	**10**	Implementation strategies of the project with report
Sector wise study & consolidation	**10**	
Video based seminar (4-5 minutes per student)	**10**	
TOTAL MARKS FOR THE COURSE	**50 MARKS**	**50 MARKS**

Semester: IV						
National Cadet Corps (Practical)						
Course Code	**:**	**21HSAE46B**		**CIE**	**:**	**50 Marks**
Credits: L:T:P	**:**	**0:0:1**		**SEE**	**:**	**50 Marks**
Total Hours	**:**	**15P**		**SEE Duration**	**:**	**2.00 Hours**

Unit 1	**7 Hrs**
Drill (Contact Hrs. 12). Foot Drill- Drill ki Aam Hidayaten, Word ki Command, Savdhan, Vishram, Aram Se, Murdna, Kadvar Sizing, Teen Line Banana, Khuli Line, Nikat Line, Khade Khade Salute Karna	
Unit 2	**3 Hrs**
Weapon Training (WT): Introduction & Characteristics of 7.62 Self Loading rifle, Identification of rifle parts	
Unit 3	**3 Hrs**
Adventure activities: Trekking and obstacle course	
Unit 4	**2 Hrs**
Social Service and Community Development (SSCD): Students will participate in various activities throughout the semester e.g., Blood donation Camp, Swachhata Abhiyan, Constitution Day, All National Festival	

Course Outcomes: After completing the course, the students will be able to:-	
CO 1	Understand that drill as the foundation for discipline and to command a group for common goal.
CO 2	Understand the importance of a weapon its detailed safety precautions necessary for prevention of accidents and identifying the parts of weapon.
CO 3	Understand that trekking will connect human with nature and cross the obstacles to experience army way of life.
CO 4	Understand the various social issues and their impact on social life, Develop the sense of self-less social service for better social & community life.

Reference Books:
1.NCC Cadet Hand Book by R K Gupta, Ramesh Publishing House, New Delhi, Book code:R- 1991, ISBN: 978-93-87918-57-3, HSN Code: 49011010
2. nccindia.ac.in

ASSESSMENT AND EVALUATION PATTERN		
WEIGHTAGE	**50%**	**50%**
	CIE	SEE
Drill Skill Test	**20**	*****
Weapon Training	**10**	*****
Adventure activities	**10**	Report on adventure and social service activities
Social service activities	**10**	
TOTAL MARKS FOR THE COURSE	**50 MARKS**	**50 MARKS**

Semester: IV						
PHYSICAL EDUCATION (SPORTS & ATHLETICS) (Practical)						
Course Code	**:**	**21HSAE46C**		**CIE**	**:**	**50 Marks**
Credits: L:T:P	**:**	**0:0:1**		**SEE**	**:**	**50 Marks**
Total Hours	**:**	**30P**		**SEE Duration**	**:**	**2.00 Hours**

Introduction of Physical Education and Sports			
General & Specific warm up exercises Conditioning exercises Any 2 Major Games Intramural Competitions			
Choose any one according to serial no			
1. Kho-Kho	Giving Kho, Single chain, Pole dive, Pole turning, 3-6 Up	**6. Kabaddi**	Hand touch, Chain hold, Ankle hold, Thigh hold, Getting bonus
2. Throwball	Service, Receive, Spin pass, Simple pass, Jump throw	**7. Volleyball**	Attack, Block, Service, Upper hand pass, Lower hand pass
3. Netball	Step with ball, Shooting, Passing, Blocking	**8. Handball**	Step with ball, Shooting, Passing, Blocking, Dribbling
4. Softball	Catching, Pitching, Slugging, Base Running, Stealing	**9. Football**	Dribbling, Chest Drop, Ball Control, Thigh Drop, Shooting
5. Ball badminton	Service, Fore hand receive, Back hand receive, Spin smash, Rally	**10. Table Tennis**	Service, Fore hand receive, Back hand receive, Smash, Rally

Course Outcomes: After completing the course, the students will be able to:-	
CO 1	Understand the basic principles and practices of Physical Education and Sports
CO 2	Instruct the Physical Activities and Sports practices for Healthy Living
CO 3	To develop professionalism among students to conduct, organize & Officiate Physical Education and Sports events at schools and community level

Reference Books:
1. Muller, J. P. (2000). Health, Exercise and Fitness. Delhi: Sports.
2.Vanaik.A (2005) Play Field Manual, Friends Publication New Delhi
3.IAAF Manual
4. M.J Vishwanath, (2002) Track and Field Marking and Athletics Officiating Manual, Silver Star Publication, Shimoga
5.Steve Oldenburg (2015) Complete Conditioning for Volleyball, Human Kinestics.
Note: Skills of Sports and Games (Game Specific books) may be referred

ASSESSMENT AND EVALUATION PATTERN		
WEIGHTAGE	**50%**	**50%**
	CIE	**SEE**
Presentation 1- Selection of topic- (phase 1) Justification for Importance, need of the hour withsurveyed data.	**10**	*****
EXPERIENTIAL LEARNING Presentation 2 (phase 2) Content development, strategies for implementationmethodologies.	**10**	*****
Case Study-based Teaching-Learning	**10**	Implementation strategies of the project with report
Sector wise study & consolidation	**10**	
Video based seminar (4-5 minutes per student)	**10**	
TOTAL MARKS FOR THE COURSE	**50 MARKS**	**50 MARKS**

Semester: IV						
Music (Practical)						
Course Code	**:**	**21HSAE46D1**		**CIE**	**:**	**50 Marks**
Credits: L:T:P	**:**	**0:0:1**		**SEE**	**:**	**50 Marks**
Total Hours	**:**	**13P**		**SEE Duration**	**:**	**2.00 Hours**

Prerequisites:
1. Students should know basics of music.
2. Students should have dedication to learn and improve on their musical skills.
3. Students should have participated in musical events and have basic knowledge on how to present their music.

Content	13 Hrs
1. Introduction to different genres of music 2. Evolution of genres in India: Inspiration from the world 3. Ragas, time and their moods in Indian Classical Music 4. Identification of ragas and application into contemporary songs 5. Adding your touch to a composition 6. Maths and Music: A demonstration 7. Harmonies in music 8. Chords: Basics and application into any song 9. Music Production-I 10. Music Production-II Students have to form groups of 2-4 and present a musical performance/ a musical task which shall be given by the experts. The experts shall judge the groups and award marks for the same. CIE will be evaluated based on their presentation, approach and implementation strategies. Students need to submit their certificates of any event they participated or bagged prizes in. This shall also be considered for CIE evaluation.	

Course Outcomes: After completing the course, the students will be able to:-	
CO 1	Understand basics of Music and improve their skills.
CO 2	Appreciate the impacts on health and well being.
CO 3	Perform and present music in a presentable manner.
CO 4	Develop skills like team building and collaboration.

Reference Books:
1.Music Cognition: The Basics by Henkjan Honing
2. Basic Rudiments Answer Book - Ultimate Music Theory: Basic Music Theory Answer Book by Glory St Germain
3. Elements Of Hindustani Classical Music by Shruti Jauhari
4. Music in North India: Experiencing Music, Expressing Culture (Global Music Series) by George E. Ruckert

ASSESSMENT AND EVALUATION PATTERN		
WEIGHTAGE	**50 %**	**50%**
	CIE	**SEE**
Presentation 1- Selection of topic- (phase 1)	**10**	*****
EXPERIENTIAL LEARNING Presentation 2 (phase 2)	**10**	*****
Case Study-based Teaching-Learning	**10**	Implementation strategies of the project with report
Sector wise study & consolidation	**10**	
Video based seminar (4-5 minutes per student)	**10**	
TOTAL MARKS FOR THE COURSE	**50 MARKS**	**50 MARKS**

Semester: IV						
Dance (Practical)						
Course Code	**:**	**21HSAE46D2**		**CIE**	**:**	**50 Marks**
Credits: L:T:P	**:**	**0:0:1**		**SEE**	**:**	**50 Marks**
Total Hours	**:**	**13P**		**SEE Duration**	**:**	**2.00 Hours**

Prerequisites:
1. Students should have the will and interest to learn dancing.
2. Students should have a positive mindset.
3. Students should be willing to interact and cooperate in group activities.

Content	13 Hrs
1. Introduction to Dance 2. Preparing the body for dancing by learning different ways to warm up. 3. Basics of different dance forms i.e. classical, eastern, and western. 4. Assessing the interest of students and dividing them into different styles based on interaction. 5. Advancing more into the styles of interest. 6. Understanding of music i.e. beats, rhythm, and other components. 7. Expert sessions in the respective dance forms. 8. Activities such as cypher, showcase to gauge learning. 9. Components of performance through demonstration. 10. Introduction to choreographies and routines. 11. Learning to choreograph. 12. Choreograph and perform either solo or in groups.	

Course Outcomes: After completing the course, the students will be able to:-	
CO 1	Understand the fundamentals of dancing.
CO 2	Adapt to impromptu dancing.
CO 3	Ability to pick choreography and understand musicality.
CO 4	To be able to do choreographies and perform in front of a live audience.

Reference Books:

1.Dance Composition: A practical guide to creative success in dance making by Jacqueline M. Smith-Autard

ASSESSMENT AND EVALUATION PATTERN		
WEIGHTAGE	**50 %**	**50%**
	CIE	**SEE**
Presentation 1- Selection of topic- (phase 1)	**10**	*****
EXPERIENTIAL LEARNING Presentation 2 (phase 2)	**10**	*****
Case Study-based Teaching-Learning	**10**	Implementation strategies of the project with report
Sector wise study & consolidation	**10**	
Video based seminar (4-5 minutes per student)	**10**	
TOTAL MARKS FOR THE COURSE	**50 MARKS**	**50 MARKS**

Semester: IV						
Lights Camera Drama (Practical)						
Course Code	**:**	**21HSAE46D3**		**CIE**	**:**	**50 Marks**
Credits: L:T:P	**:**	**0:0:1**		**SEE**	**:**	**50 Marks**
Total Hours	**:**	**13P**		**SEE Duration**	**:**	**2.00 Hours**

Prerequisites:
1. Students should have creative oriented mindset and social concern.
2. Students should have dedication to work with their classmates for long hours until a collective goal is reached.
3. Students should be ready to sacrifice some of the timely will and wishes to achieve targets on time.

Content	13 Hrs
1. Break the ICE 2. Introduction to freedom Talk to each and every single person for a period of 5 complete minutes. This is aimed at to make everyone in the room comfortable with each other. This helps everyone get over social anxiety, Shyness and Nervousness. 3. Ura 4. Rhythm Voice Projection, Voice Modulation, Weeping & Coughing Voice projection is the strength of speaking or singing whereby the voice is used powerfully and clearly. It is a technique employed to command respect and attention, as when a teacher talks to a class, or simply to be heard clearly, as used by an actor in a theatre. 5. It's Leviosa, Not Leviosaaa! 6. Speech work: Diction, Intonation, Emphasis, Pauses, Pitch and Volume Tempo Dialogues delivery. The art of dialogue delivery plays a vital role in in ensuring the efficacy of communication especially from the dramatic aspect of it, this unit discusses some tips to help the young actors improve their dialogue delivery skills: 7. Elementary, My dear Watson. 8. Responsibilities of an actor tools of an actor character analysis Observations aspects, Stage presence, concentration, conviction, confidence, energy and directionality. 9. Show time 10. Pick a genre: COMEDY, THRILLER, HORROR, and TRAGEDY: Showcase a performance. Stylized acting with reference to historical and mythological plays. Mime: conventional, occupational and pantomime Mono acting: different types of characters	

Course Outcomes: After completing the course, the students will be able to:-	
CO 1	Develop a range of Theatrical Skills and apply them to create a performance.
CO 2	Work collaboratively to generate, develop and communicate ideas.
CO 3	Develop as creative, effective, independent and reflective students who are able to make inform ed choices in process and performance.
CO 4	Develop an awareness and understanding of the roles and processes undertaken in contemporary professional theatre practice.

Reference Books:
1.The Empty Space by Peter Brook
2.The Viewpoints Book: A Practical Guide to Viewpoints and Composition by Anne Bogart and Tina Landau

ASSESSMENT AND EVALUATION PATTERN		
WEIGHTAGE	**50 %**	**50%**
	CIE	**SEE**
Presentation 1- Selection of topic- (phase 1)	**10**	*****
EXPERIENTIAL LEARNING Presentation 2 (phase 2)	**10**	*****
Case Study-based Teaching-Learning	**10**	Implementation strategies of the project with report
Sector wise study & consolidation	**10**	
Video based seminar (4-5 minutes per student)	**10**	
TOTAL MARKS FOR THE COURSE	**50 MARKS**	**50 MARKS**

Semester: IV						
Lights Camera Drama (Practical)						
Course Code	**:**	**21HSAE46E1**		**CIE**	**:**	**50 Marks**
Credits: L:T:P	**:**	**0:0:1**		**SEE**	**:**	**50 Marks**
Total Hours	**:**	**13P**		**SEE Duration**	**:**	**2.00 Hours**

Prerequisites:
Although there are no prerequisite qualifications for this subject, students must have a basic understanding of and interest in the fields of art and design in order to enroll in it.

Content	**13 Hrs**
1. Use points, line and curves to create various shapes and forms 2. Use of shapes and forms to create various objects and structures 3. Recognizing distinctions in objects when viewed from various perspectives and grasping basic notions of perspective 4. Students will be introduced to the significance of color in art, as well as the principles of color theory and application. 5. Applied the concepts of unity, harmony, balance, rhythm, emphasis and proportion, abstraction and stylization to create a composition. 6.Learn how to use which materials and for what types of art and textures. 7. Use of the above concepts to create art through the medium of collage, mosaic, painting, mural, batik, tie and dye. 8. Real world application of the above concepts in the form of book cover design and illustration, cartoon, poster, advertisements, magazine, computer graphics and animation. 9. Familiarization with the many art forms and techniques of expression found throughout India. **AND** **ONE EDUCATIONAL VISIT TO AN ART MUSEUM / INSTITUTE / GALLERY** Students must turn in assignments for each of the above said topics on a weekly basis and have to compulsorily take part in the museum visit. CIE will be evaluated based on a still life piece, a composition using any one of the media of composition and a presentation on Indian art styles and creation of a piece pertaining to the presented art style.	

Course Outcomes: After completing the course, the students will be able to:-	
CO 1	To use lines, shapes, and colors to depict the various sentiments and moods of life and nature.
CO 2	To use one's creativity to develop forms and color schemes, as well as the ability to portray them effectively in drawing and painting on paper.
CO 3	To develop the ability to properly use drawing and painting materials (surfaces, tools and equipment, and so on).
CO 4	To improve their observation abilities by studying everyday items as well as numerous geometrical and non- geometrical (i.e. organic) shapes found in life and nature and to hone their drawing and painting talents in response to these insights.

Reference Books:
1.Catching the Big Fish: Meditation, Consciousness, and Creativity by David Lynch
2.Art & Fear: Observations on the Perils (and Rewards) of Artmaking by David Bayles & Ted Orland

ASSESSMENT AND EVALUATION PATTERN		
WEIGHTAGE	**50 %**	**50%**
	CIE	**SEE**
Presentation 1- Selection of topic- (phase 1)	**10**	*****
EXPERIENTIAL LEARNING Presentation 2 (phase 2)	**10**	*****
Case Study-based Teaching-Learning	**10**	Implementation strategies of the project with report
Sector wise study & consolidation	**10**	
Video based seminar (4-5 minutes per student)	**10**	
TOTAL MARKS FOR THE COURSE	**50 MARKS**	**50 MARKS**

Semester: IV						
Photography (Practical)						
Course Code	**:**	**21HSAE46E2**		**CIE**	**:**	**50 Marks**
Credits: L:T:P	**:**	**0:0:1**		**SEE**	**:**	**50 Marks**
Total Hours	**:**	**13P**		**SEE Duration**	**:**	**2.00 Hours**

Prerequisites:
1. Students should know basics of photography and cinematography.
2. Students should have dedication to learn and improve on their photography and film making skills.
3. Students should have participated in photography events.
4. Students should have a DSLR camera.

Content	13 Hrs

1. Introduction to photography.
2. Understanding the terminologies of DSLR.
3. Elements of photography.
4. Introduction to script writing, storyboarding.
5. Understanding the visualization and designing a set.
6. Basics of film acting
7. Video editing using software
8. Introduction to cinematography.
9. Understanding about lighting and camera angles.
10. Shooting a short film.

Students must form groups of 2-4 and present a short film which shall be given by the experts. The experts shall judge the groups and award marks for the same.
CIE will be evaluated based on their presentation, approach and implementation strategies. Students need to submit their certificates of any event they participated or bagged prizes in. This shall also be considered for CIE evaluation.

Course Outcomes: After completing the course, the students will be able to:-	
CO 1	Understand basics of photography and videography and improve their skills
CO 2	Appreciate the skills acquired from photography
CO 3	Perform and present photos and films in a presentable manner
CO 4	Develop skills like team building and collaboration

Reference Books:
1.Read This If You Want to Take Great Photographs – Henry Carroll
2. The Digital Photography Book: Part 1 – Scott Kelby

ASSESSMENT AND EVALUATION PATTERN		
WEIGHTAGE	**50 %**	**50%**
	CIE	**SEE**
Presentation 1- Selection of topic- (phase 1)	**10**	*****
EXPERIENTIAL LEARNING Presentation 2 (phase 2)	**10**	*****
Case Study-based Teaching-Learning	**10**	Implementation strategies of the project with report
Sector wise study & consolidation	**10**	
Video based seminar (4-5 minutes per student)	**10**	
TOTAL MARKS FOR THE COURSE	**50 MARKS**	**50 MARKS**

Semester: IV						
Bridge Course: C Programming (Theory) (Common to all Branches)						
Course Code	**:**	**21DCS47**		**CIE**	**:**	**50 Marks**
Credits: L:T:P	**:**	**2:0:0**		**SEE**	**:**	**50 Marks**
Total Hours	**:**	**30L**		**SEE Duration**	**:**	**2 Hours**

Unit-I	**08 Hrs**
Introduction-Perspectives **Business Domains:** Programming. **Applications:** Design games,GUI,DBMS, Embedded Systems, Compilers and Operating Systems. **Introduction to Computer Concepts:**Introduction to Computer Hardware, Software and its Types. **Introduction to C programming:** Programming paradigms, Basic structure of C program, Process of compiling and running a C program, Features of C language, Character set, C tokens, Keywords and Identifiers, Constants, Variables, Data types, Pre-processor directives. **Handling Input and Output operations and operators:** Formatted input/output functions, Unformatted input/output functions with programming examples using all functions.	
Unit – II	**10 Hrs**
Operators: Introduction to operator set, Arithmetic operators, Relational operators, Logical Operators, Assignment operators, Increment and Decrement operators, Conditional operators, Bit-wise operators, Special operators. **Expressions:** Arithmetic expressions, evaluation of expressions, Precedence of arithmetic operators, Type conversion in expressions, Operator precedence and associativity. **Decision Making and Branching:** Decision making with 'if' statement, Simple 'if' statement, the 'if…else' statement, nesting of 'if…else' statements, The 'else if' ladder, The 'switch' statement, The '*?:'* operator, The '*goto'* statement.	
Unit –III	**12 Hrs**
Programming Constructs: Decision making and looping: The 'for','while','do-while' statements with examples, Jumps in loops**. Arrays:** Introduction to Arrays, Types of arrays, Declaration arrays, Initializing dimensional arrays (One Dimensional and Multidimensional Array) with examples. **String Operations:** Introduction, Declaration and Initializing String Variables using arrays, String operations and functions with examples. **Functions:** Need for Functions, Types of functions (User Defined and Built –In), working with functions, Definition, declaration and its scope. **Pointers:** Introduction, Benefits of using pointers, Declaration and Initialization of pointers, Obtaining a value of a variable.	

Course Outcomes: After completing the course, the students will be able to:-	
CO 1	Apply logical skills to solve the engineering problems using C programming constructs.
CO 2	Evaluate the appropriate method/data structure required in C programming to develop solutions by investigating the problem.
CO 3	Design a sustainable solution using C programming with societal and environmental concern by engaging in lifelong learning for emerging technology
CO 4	Demonstrate programming skills to solve inter-disciplinary problems using modern tools effectively by exhibiting team work through oral presentation and written reports.

Reference Books	
1.	Programming in C, P. Dey, M. Ghosh, 2011, 2nd Edition, Oxford University press, ISBN (13): 9780198065289.
2.	Algorithmic Problem Solving, Roland Backhouse, 2011, Wiley, ISBN: 978-0-470-68453-5
3.	The C Programming Language, Kernighan B.W and Dennis M. Ritchie, 2015, 2nd Edition, Prentice Hall, ISBN (13): 9780131103627.
4.	Turbo C: The Complete Reference, H. Schildt, 2000, 4th Edition, Mcgraw Hill Education, ISBN-13: 9780070411838.
5.	Rasberry pi: https://www.raspberrypi.org/documentation/
6.	Nvidia: https://www.nvidia.com/en-us/
7.	Ardunio: https://www.arduino.cc/en/Tutorial/BuiltInExamples
8.	Scratch software: https://scratch.mit.edu/

PRACTICE PROGRAMS
Implement the following programs using cc/gcc compiler
1. Develop a C program to compute the roots of the equation $ax^2 + bx + c = 0$.
2. Develop a C program that reads N integer numbers and arrange them in ascending or descending order using selection sort and bubble sort technique.
3. Develop a C program for Matrix multiplication.
4. Develop a C program to search an element using Binary search and linear search techniques.
5. Using functions develop a C program to perform the following tasks by parameter passing to read a string from the user and print appropriate message for palindrome or not palindrome.
6. Develop a C program to compute average marks of 'n' students (Name, Roll_No, Test Marks) and search a particular record based on 'Roll_No'.
7. Develop a C program using pointers to function to find given two strings are equal or not.
8. Develop a C program using recursion, to determine GCD , LCM of two numbers and to perform binary to decimal conversion.

ASSESSMENT AND EVALUATION PATTERN		
	CIE	**SEE**
WEIGHTAGE	**100%**	**---**
QUIZZES		
Quiz-I	Each quiz is evaluated for 10 marks adding up to 1**0 MARKS.**	
Quiz-II		
THEORY COURSE (Bloom's Taxonomy Levels: Remembering, Understanding, Applying, Analyzing, Evaluating, and Creating)		
Test – I	Each test will be conducted for 50 Marks adding upto 100 marks. Final test marks will be reduced to 3**0 MARKS**	
Test – II		
EXPERIENTIAL LEARNING	**10**	
TOTAL MARKS FOR THE COURSE	**50**	**---**

Semester: IV						
Universal Human Values 2 (Theory & Practical)						
Course Code	**:**	**21HSS48**		**CIE**	**:**	**50 Marks**
Credits: L:T:P	**:**	**2:0:0**		**SEE**	**:**	**50 Marks**
Total Hours	**:**	**28L+14P**		**SEE Duration**	**:**	**2.00 Hours**

Unit-I	**05 Hrs**
Course Introduction - Need, Basic Guidelines, Content and Process for Value Education: Purpose and motivation for the course, recapitulation from Universal Human Values-I, Self-Exploration–what is it? - Its content and process; 'Natural Acceptance' and Experiential Validation- as the process for self-exploration, Continuous Happiness and Prosperity- A look at basic Human Aspirations, Right understanding, Relationship and Physical Facility- the basic requirements for fulfilment of aspirations of every human being with their correct priority, Understanding Happiness and Prosperity correctly- A critical appraisal of the current scenario, Method to fulfil the above human aspirations: understanding and living in harmony at various levels. Include practice sessions to discuss natural acceptance in human being as the innate acceptance for living with responsibility (living in relationship, harmony and co-existence) rather than as arbitrariness in choice based on liking-disliking.	
Unit – II	**06 Hrs**
Understanding Harmony in the Human Being - Harmony in Myself!: Understanding human being as a co-existence of the sentient 'I' and the material 'Body', Understanding the needs of Self ('I') and 'Body' - happiness and physical facility, Understanding the Body as an instrument of 'I' (I being the doer, seer and enjoyer), Understanding the characteristics and activities of 'I' and harmony in 'I', Understanding the harmony of I with the Body: Sanyam and Health; correct appraisal of Physical needs, meaning of Prosperity in detail, Programs to ensure Sanyam and Health. Include practice sessions to discuss the role others have played in making material goods available to me. Identifying from one's own life. Differentiate between prosperity and accumulation. Discuss program for ensuring health vs dealing with disease	
Unit –III	**06 Hrs**
Understanding Harmony in the Family and Society- Harmony in Human Human Relationship: Understanding values in human-human relationship; meaning of Justice (nine universal values in relationships) and program for its fulfilment to ensure mutual happiness; Trust and Respect as the foundational values of relationship, Understanding the meaning of Trust; Difference between intention and competence, Understanding the meaning of Respect, Difference between respect and differentiation; the other salient values in relationship, Understanding the harmony in the society (society being an extension of family): Resolution, Prosperity, fearlessness (trust) and co-existence as comprehensive Human Goals, Visualizing a universal harmonious order in society- Undivided Society, Universal Order- from family to world family. Include practice sessions to reflect on relationships in family, hostel and institute as extended family, real life examples, teacher-student relationship, goal of education etc. Gratitude as a universal value in relationships. Discuss with scenarios. Elicit examples from students' lives	

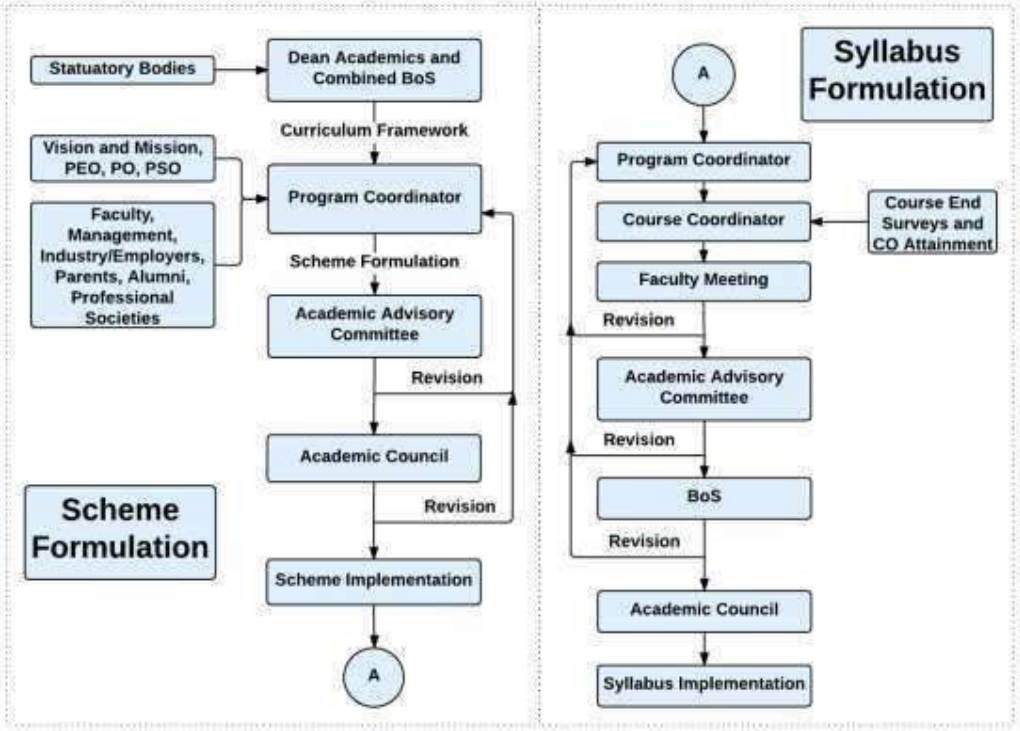
Unit –IV	05 Hrs
Understanding Harmony in the Nature and Existence - Whole existence as Coexistence: Understanding the harmony in the Nature, Interconnectedness and mutual fulfilment among the four orders of nature recyclability and self-regulation in nature, Understanding Existence as Co-existence of mutually interacting units in all pervasive space, Holistic perception of harmony at all levels of existence. Include practice sessions to discuss human being as cause of imbalance in nature (film "Home" can be used), pollution, depletion of resources and role of technology etc.	
Unit –V	**06 Hrs**
Implications of the above Holistic Understanding of Harmony on Professional Ethics, Natural acceptance of human values, Definitiveness of Ethical Human Conduct, Basis for Humanistic Education, Humanistic Constitution and Humanistic Universal Order, Competence in professional ethics: a. Ability to utilize the professional competence for augmenting universal human order b. Ability to identify the scope and characteristics of people friendly and eco-friendly production systems, c. Ability to identify and develop appropriate technologies and management patterns for above production systems, Case studies of typical holistic technologies, management models and production systems, Strategy for transition from the present state to Universal Human Order: a. At the level of individual: as socially and ecologically responsible engineers, technologists and managers b. At the level of society: as mutually enriching institutions and organizations, Sum up. Include practice Exercises and Case Studies will be taken up in Practice (tutorial) Sessions eg. To discuss the conduct as an engineer or scientist etc.	

Course Outcomes: After completion of the course the students will be able to	
CO1	By the end of the course, students are expected to become more aware of themselves, and their surroundings (family, society, nature); they would become more responsible in life, and in handling problems with sustainable solutions,
CO2	While keeping human relationships and human nature in mind. They would have better critical ability.
CO3	They would also become sensitive to their commitment towards what they have understood (human values, human relationship and human society).
CO4	It is hoped that they would be able to apply what they have learnt to their own self in different day-to-day settings in real life, at least a beginning would be made in this direction

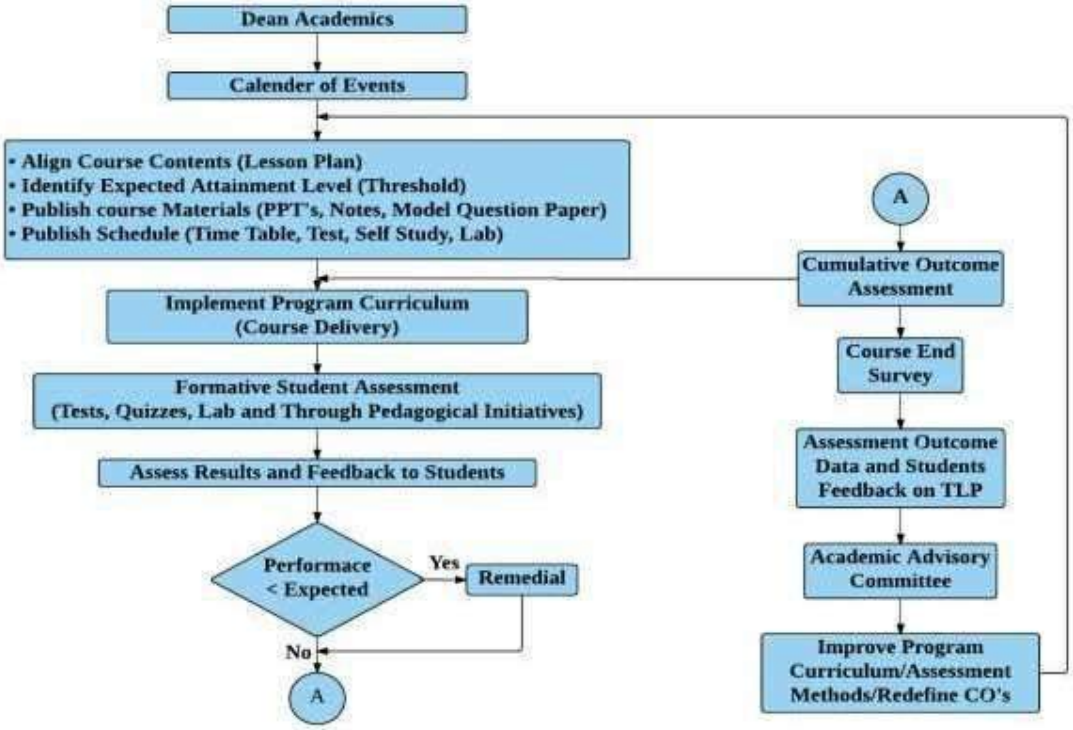
Reference Books	
1	Jeevan Vidya: Ek Parichaya, A Nagaraj, Jeevan Vidya Prakashan, Amarkantak, 1999.
2	Human Values, A.N. Tripathi, New Age Intl. Publishers, New Delhi, 2004
3	The Story of Stuff (Book).
4	The Story of My Experiments with Truth - by Mohandas Karamchand Gandhi
5	Small is Beautiful - E. F Schumacher.
6	Slow is Beautiful - Cecile Andrews.

ASSESSMENT AND EVALUATION PATTERN
This is a compulsory credit course. The assessment is to provide a fair state of development of the student, so participation in classroom discussions, self-assessment, peer assessment etc. will be used in evaluation. Example: Assessment by faculty mentor: 10 marks Self-assessment: 10 marks Assessment by peers: 10 marks Socially relevant project/Group Activities/Assignments: 20 marks Semester End Examination: 50 marks. The overall pass percentage is 40%. In case the student fails, he/she must repeat the course

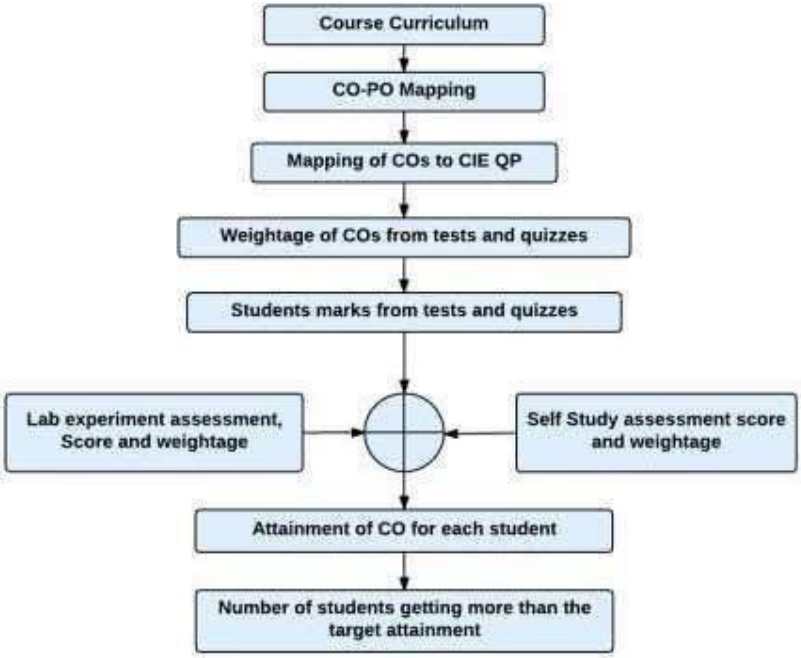
Curriculum Design Process



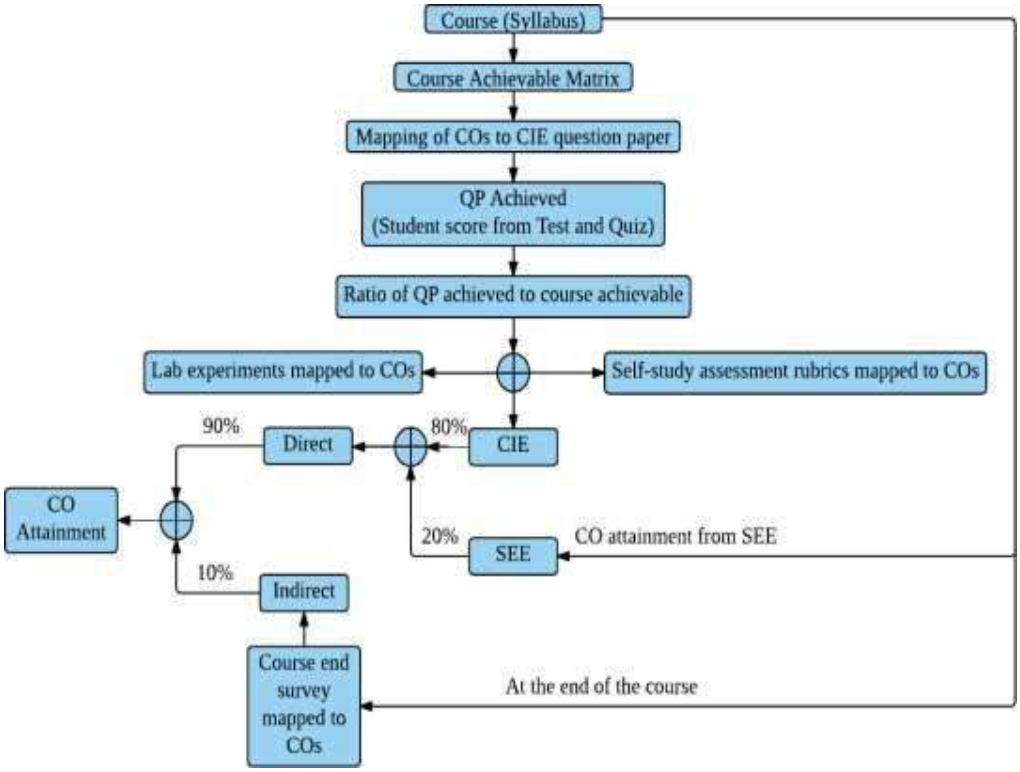
Academic Planning and Implementation



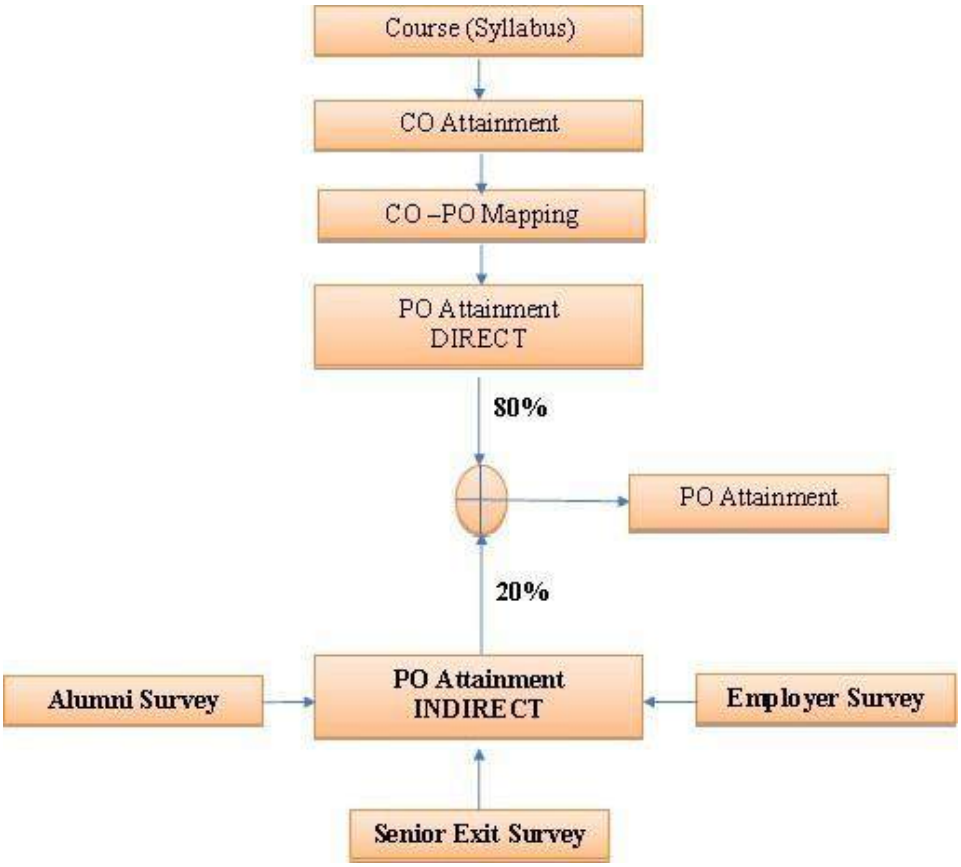
Process for Course Outcome Attainment



Final CO Attainment Process



Program Outcome Attainment Process



PROGRAM OUTCOMES (POs)

1. **Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialisation for the solution of complex engineering problems.

2. **Problem analysis:** Identify, formulate, research literature, and analyse complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

3. **Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for public health and safety, and cultural, societal, and environmental considerations.

4. **Conduct investigations of complex problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

5. **Modern tool usage**: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools, including prediction and modelling to complex engineering activities, with an understanding of the limitations.

6. **The engineer and society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal, and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

7. **Environment and sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

8. **Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

9. **Individual and team work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

10. **Communication:** Communicate effectively on complex engineering activities with the engineering community and with the society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

11. **Project management and finance:** Demonstrate knowledge and understanding of the engineering and management principles and apply these to one"s own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

12. **Life-long learning:** Recognise the need for, and have the preparation and ability to engage inindependent and life-long learning in the broadest context of technological change.