#### HYDERABAD KARNATAKA EDUCATION SOCIETY'S PDA COLLEGE OF ENGINEERING, KALABURAGI 2022-23 FIRST-YEAR SYLLABUS

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109         I Semester (Mechanical Engineering Stream) Mech, /EE         (Physics Group)         150           110         22MATM11         Mathematics for ME Stream-I         151           111         22PHYM12         Physics for ME Stream         153           112         22EME13         Elements of Mechanical Engineering         156           113         22ESC145         Introduction to C Programming         157           114         22ETC15X         Emerging Technology Courses         175-185           115         22ENG16         Communicative English         159           22KSK17/         Samskrutika Kannada/ Balake Kannada         160/161           117         22IDT18         Innovation and Design Thinking         163           118         II Semester (Mechanical Engineering Stream) Mech, /EE         (Chemistry Group)         150           119         22MATM21         Mathematics for ME Stream-II         164           120         22CHEM22         Chemistry for ME Stream         166           121         22ESC241         Introduction to Civil Engineering         168           122         22ESC241         Introduction to Civil Engineering         169           123         22PUC25X         Programming Language courses I & II         186-194				
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110         22PHYM12         Physics for ME Stream         1153           111         22EME13         Elements of Mechanical Engineering         1156           113         22ESC145         Introduction to C Programming         1157           114         22ETC15X         Emerging Technology Courses         175-185           115         22ENG16         Communicative English         159           22KSK17/         Samskrutika Kannada/ Balake Kannada         160/161           117         22IDT18         Innovation and Design Thinking         163           118         II Semester (Mechanical Engineering Stream) Mech, /EE ( Chemistry Group)         150           119         22MATM21         Mathematics for ME Stream         166           121         22CED23         Computer Aided Engineering Drawing         168           122         22ESC241         Introduction to Civil Engineering         169           123         22PUC25x         Programming Language courses 1& II         170           126         22SFH28         Scientific Foundations of Health         172           127         22ESC141/241         Introduction to Civil Engineering         173           128         22ESC142/242         Introduction to Electricial Engineering         174				
112         22EME13         Elements of Mechanical Engineering         156           113         22ESC145         Introduction to C Programming         157           114         22ETC15X         Emerging Technology Courses         175-185           115         22ENG16         Communicative English         159           22KSK17/         Samskrutika Kannada/ Balake Kannada         160/161           117         22IDT18         Innovation and Design Thinking         163           118         II Semester (Mechanical Engineering Stream) Mech, /EE ( Chemistry Group)         150           119         22MATM21         Mathematics for ME stream-II         164           120         22CCED23         Computer Aided Engineering Drawing         168           122         22ESC241         Introduction to Civil Engineering         169           123         22PUC25X         Programming Language courses I & II         186-194           124         22PWs26         Professional writing skills in iEnglish         170           125         22ICO27         Indian Constitution         171           126         22SFH28         Scientific Foundations of Health         172           127         22ESC141/241         Introduction to Civii Engineering         173      <		22PHYM12		
113         22ESC145         Introduction to C Programming         157           114         22ETC15X         Emerging Technology Courses         175-185           115         22ENG16         Communicative English         159           22KSK17/         Samskrutika Kannada/ Balake Kannada         160/161           117         22IDT18         Innovation and Design Thinking         163           118         II Semester (Mechanical Engineering Stream) Mech, /EE ( Chemistry Group)         150           119         22MATM21         Mathematics for ME stream-II         164           120         22CED23         Computer Aided Engineering Drawing         168           121         22ESC241         Introduction to Civil Engineering         169           123         22PUC25x         Programming Language courses I & II         186-194           124         22PWS26         Professional writing skills in lenglish         170           125         22ICO27         Indian Constitution         171           126         22SFH28         Scientific Foundations of Health         172           127         22ESC141/241         Introduction to Civil Engineering         173           128         22ESC142/242         Introduction to Electrical Engineering         174 <td></td> <td></td> <td>-</td> <td></td>			-	
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117         22IDT18         Innovation and Design Thinking         163           118         II Semester (Mechanical Engineering Stream) Mech, /EE (Chemistry Group)         150           119         22MATM21         Mathematics for ME stream-II         164           120         22CHEM22         Chemistry for ME Stream         166           121         22CED23         Computer Aided Engineering Drawing         168           122         22ESC241         Introduction to Civil Engineering         169           123         22PLC25X         Programming Language courses I & II         186-194           124         22PWS26         Professional writing skills in iEnglish         170           125         22ICO27         Indian Constitution         171           126         22SFH28         Scientific Foundations of Health         172           127         22ESC141/241         Introduction to Civil Engineering         173           128         22ESC142/242         Introduction to Electrical Engineering         174           129         22ESC143/243         Introduction to Electronics Engineering         175           130         22ESC144/244         Introduction to C Programming         176           131         22ESC145/245         Introduction to C Programming<	116			160/161
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120(ESC-I) Engineering Science Courses-I&II12722ESC141/241Introduction to Civil Engineering17312822ESC142/242Introduction to Electrical Engineering17412922ESC143/243Introduction to Electronics Engineering17513022ESC144/244Introduction to Mechanical Engineering17613122ESC145/245Introduction to C Programming177				
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13022ESC144/244Introduction to Mechanical Engineering17613122ESC145/245Introduction to C Programming177				
13122ESC145/245Introduction to C Programming177				
(ETC-I) Emerging Technology Courses-I&II	131	22ESC145/245		177
	L		(ETC-I) Emerging Technology Courses-I&II	

132	22ETC15A/25A	Green Buildings	179
133	22ETC15B/25B	Introduction to solar PV systems	180
134	22ETC15C/25C	Renewable Energy Sources	182
135	22ETC15D/25D	Introduction to Internet of Things (IOT)	183
136	22ETC15E/25E	Introduction to Cyber Security	184
137	22ETC15F/25F	WASTE MANAGEMENT	185
		(PLC-I) Programming Language Courses-I&II	
138	22PLC15A/25A	Introduction to Web Programming	186
139	22PLC15B/25B	Introduction to Python Programming	188
140	22PLC15C/25C	Basics of JAVA programming	190
141	22PLC15D/25D	Introduction to C++ Programming	192
142	22PLC15E/25E	C and UNIX programming	194

Ou	tcome-Based	Education (OBE)ar	P.D.A College of Engineering ala Scheme of Teaching an ad Choice Based Credit System (CBCS)	nd Examination	s-2022			,	2022-2	3)			
IS	emester (C	CCT Engineeri	ng Stream)				(Cl	her	nistry	Grou	<b>p</b> )		
		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~		Teaching Examination									
SI. No	Course ar Code	nd Course	Course Title	TD/PSB	Theory Lectur	Tutorial	Practical/	SDA .	Duration in hours	CIEMark s	SEE Marks	Total Marks	
					L	Т	Р	S		c s		ΈZ	
1	ASC(IC)	22MATC11	Mathematics for Civil Engg Stream-I	Maths	2	2	2	0	03	50	50	100	04
2	ASC(IC)	22CHEC12	Chemistry for Civil Engg Stream	Chemistry	2	2	2	0	03	50	50	100	04
3	ESC	22CED13	Computer-Aided Engineering Drawing	Civil/Mech Engg dept	2	0	2	0	03	50	50	100	03
4	ESC-I	22ESC145	Introduction to C Programming	Respective EnggDept	2	0	2	0	03	50	50	100	03
5	ETC-I	22ETC15A	Emerging Technology Courses		3	0	0	0	03	50	50	100	03
6	AEC	22ENG16	Communicative English	Humanities	1	0	0	0	1.5	50	50	100	01
7	HSMS	22ICO17/27	Indian Constitution	Humanities	1	0	0	0	01	50	50	100	01
8	HSMS	22SFH18	Scientific Foundations of Health	AnyDept	1	0	0	0	01	50	50	100	01
i .				TOTAL				1		400	400	800	20

					Feaching and H	Examina	tions-20	22	·					
	C Semester (CC Group)		(	BE)and Choice Ba	sed Credit Syste	em(CBC	S) (Effe	ctive from	n the a	cademic	year 20		Physics	
						Teachin	g Hour	s/Week			Ex	aminatio	n	
S l. N o	Course ar CourseCo e		CourseTitle		TD/PSB	Theor y Lectu	Tutoria I	Practical/ Drawing	SDA	Duration in hours	CIE Mor	SEE Marks	Tot al	credits
		1				L	Т	Р	S					-
1	ASC(IC)	22MATC21	Mathematics stream-II	for Civil Engg	Maths	2	2	2	0	03	50	50	100	04
2	ASC(IC)	22PHYC22	Physics for Civ	il Engg Stream	PHY	2	2	2	0	03	50	50	100	04
3	ESC	22CIV23	Engineering M		Civil ng Dept	2	2	0	0	03	50	50	100	03
4	ESC-I	22ESC244	Introduction Engineering	To Mechanical	Respective Engg dept	3	0	0	0	03	50	50	100	03
5.	PLC-I	22PLC25X	Programming Courses-I&II	Language	Any dept	2	0	2	0	03	50	50	100	03
6	AEC	22PWS26	Professional V English	Writing Skills in	Humanities	1	0	0	0	1.5	50	50	100	01
7	HSMC	22KSK27/ 22KBK27	Samskrutika Kannada	Kannada/ Balak	Humanities	1	0	0	0	1.5	50	50	100	01
8	AEC/SDC	22IDT28	Innovation Thinking	and Design	Any Dept	1	0	0	0	01	50	50	100	01
					TOTAL						40 0	400	800	20

	thematics-I for Civil Engine		
- 1	e Based Credit System (CBC om the academic year 2022-22	-	
Course Code	22MATC11	CIE Marks	50
Credits	04	SEE Marks	50
Course Type	Integrated		
Contact Hours/Week (L-T-P)	2-2-2	Total Marks	100
Contact Hours of Pedagogy	42 hours Theory +10 Lab slots	Exam Hours	03
Module-1	Calculus		(5L+3T
Pedal equations. Curvature and Radius of curv Problems. Self-study: Center and circle of curvature, ev Applications: Applied Mechanics, Structural (RBT Levels: L1, L2 and L3)	olutes and involutes.		Simple
	nsion and Multivariable Cal	enlus (6I	2+3T)
Introduction to series expansion and partia			<b>7731</b> )
applications.		or ervir engineering	
Taylor's and Maclaurin's series expansion	for one variable (Statement)	only) – problems.	
Indeterminate forms – L'Hospital's rule, prob		proortino.	
Partial differentiation, total derivative - diff		tions. Jacobian and	
problems. Maxima and minima for a function			
Self-study: Euler's theorem and problems. M	ethod of Lagrange's undetern	nined multipliers with sir	igle constraint.
Applications: Computation of stress and strai	n, Errors and approximations	, Estimating the critical p	oints and
extreme values (RBT Levels: L1, L2 and I			
	erential Equations (ODEs) (		6L+2T)
Introduction to first-order ordinary differe	ntial equations pertaining t	o the applications for	
Civil engineering.		1100 11 1	<b>T</b>
Linear and Bernoulli's differential equation		et differential equations -	Integrating
factors on $\frac{1}{N} \left( \frac{\partial M}{\partial y} - \frac{\partial N}{\partial x} \right)$ and $\frac{1}{M} \left( \frac{\partial N}{\partial x} - \right)$	$\partial M$		
factors on $\frac{1}{N} = \frac{1}{2N} - \frac{1}{2r}$ and $\frac{1}{M} = \frac{1}{2r}$			
	- /		
Orthogonal trajectories and Newton's law of	6		
Nonlinear differential equations: Introduction		utions, Solvable for p on	ly, Clairaut's
equations, reducible to Clairaut's equations -		1. 6.1 1 1.1.	C 1 C
Self-Study: Applications of ODE's in Civil E		aing of the beam, whiriii	ng of shaft,
			-
solution of non-linear ODE by the method of	solvable for x and y.		-
solution of non-linear ODE by the method of <b>Applications:</b> Rate of Growth or Decay, Con	solvable for x and y.		-
solution of non-linear ODE by the method of <b>Applications:</b> Rate of Growth or Decay, Con <b>(RBT Levels: L1, L2 and L3)</b>	solvable for x and y. duction of heat.		
solution of non-linear ODE by the method of Applications: Rate of Growth or Decay, Con (RBT Levels: L1, L2 and L3) Module-4 Integ	solvable for x and y. duction of heat. ral Calculus	(6L+3T)	
solution of non-linear ODE by the method of Applications: Rate of Growth or Decay, Con RBT Levels: L1, L2 and L3) Module-4 Integ Introduction to Integral Calculus in Civil F	solvable for x and y. duction of heat. ral Calculus Engineering applications.	(6L+3T)	
solution of non-linear ODE by the method of Applications: Rate of Growth or Decay, Con- RBT Levels: L1, L2 and L3) Module-4 Integ Introduction to Integral Calculus in Civil E Multiple Integrals: Evaluation of double and	solvable for x and y. duction of heat. ral Calculus Engineering applications.	( <b>6L+3T</b> ) f double integrals by	
solution of non-linear ODE by the method of Applications: Rate of Growth or Decay, Con (RBT Levels: L1, L2 and L3) Module-4 Integ Introduction to Integral Calculus in Civil E Multiple Integrals: Evaluation of double and change of order of integration, changing into p	solvable for x and y. duction of heat. ral Calculus Engineering applications.	( <b>6L+3T</b> ) f double integrals by	-
solution of non-linear ODE by the method of Applications: Rate of Growth or Decay, Con (RBT Levels: L1, L2 and L3) Module-4 Integ Introduction to Integral Calculus in Civil E Multiple Integrals: Evaluation of double and change of order of integration, changing into p Volume by double integral. Problems.	solvable for x and y. duction of heat. ral Calculus Angineering applications. It triple integrals, evaluation of polar coordinates. Application	(6L+3T) f double integrals by as to find Area and	Problems
Solution of non-linear ODE by the method of Applications: Rate of Growth or Decay, Con- (RBT Levels: L1, L2 and L3) Module-4 Integral Introduction to Integral Calculus in Civil E Multiple Integrals: Evaluation of double and change of order of integration, changing into p Volume by double integral. Problems. Beta and Gamma functions: Definitions, pro-	solvable for x and y. duction of heat. ral Calculus Engineering applications. triple integrals, evaluation of polar coordinates. Application operties, relation between Bet	(6L+3T) f double integrals by as to find Area and	Problems.
solution of non-linear ODE by the method of <b>Applications:</b> Rate of Growth or Decay, Control <b>(RBT Levels: L1, L2 and L3)</b>	solvable for x and y. duction of heat. ral Calculus Engineering applications. triple integrals, evaluation of polar coordinates. Application operties, relation between Bet atter of gravity.	(6L+3T) f double integrals by as to find Area and a and Gamma functions.	

	Module-5 Linear Algebra (5L+3T)
Introd	uction of linear algebra related to Civil Engineering applications.
Ele equation Eigen Self-St Cayley	mentary row transformation of a matrix, Rank of a matrix. Consistency and solution of a system of linear ons - Gauss-elimination method, Gauss-Jordan method and approximate solution by Gauss-Seidel method. values and Eigenvectors, Rayleigh's power method to find the dominant Eigen value and Eigenvector. tudy: Solution of a system of linear equations by Gauss-Jacobi iterative method. Inverse of a square matrix by r- Hamilton theorem. eations: Structural Analysis, Balancing equations.(RBT Levels: L1, L2 and L3)
List of	Laboratory experiments (2 hours/week per batch/ batch strength 15)
	sessions + 1 repetition class + 1 Lab Assessment
1	2D plots for Cartesian and polar curves
2	Finding angle between polar curves, curvature and radius of curvature of a given curve
3	Finding partial derivatives, Jacobian and plotting the graph
4	Applications to Maxima and Minima of two variables
5	Solution of first-order differential equation and plotting the graphs
6	Program to compute surface area, volume and centre of gravity
7	Evaluation of improper integrals
8	Numerical solution of system of linear equations, test for consistency and graphical
	representation
9	Solution of system of linear equations using Gauss-Seidel iteration
10	Compute eigen values and eigenvectors and find the largest and smallest eigen value by
	Rayleigh power method
.Sugge	ested software's: Mathematica/MatLab/Python/Scilab
	e outcome (Course Skill Set)
	end of the course the student will be able to:
CO 1	
CO 2	
	functions
CO 3	
CO 4	
CO 5	
	eigen values and eigen vectors. Familiarize with modern mathematical tools namely
	MATHEMATICA/ MATLAB/ PYTHON/SCILAB

Course Title:	Chemistry for Civil Engin	eeringstream		
Course Code:	22CHEC12/22	CIE Marks	50	
Course Type (Theory/Practical/Integrated)	Integrated	SEE Marks	50	
		Total Marks	100	
Teaching Hours/Week (L:T:P: S) <sup>1</sup>	2:2:2:0	ExamHours	03+02	
Total Hours of Pedagogy	40 hours Theory +10 to 12 Lab slots	Credits	04	
	1: Structural Materials (8 hr)			
Metals and Alloys: Introduction, Properties and Cement: Introduction, composition, properties, and hardening of cement, additives for cement an <b>Refractories:</b> Introduction, classification based materials. Glass: Introduction, Composition, Types, Prepar- Self-learning: Chemistry of reinforced concrete t	classification, manufacturing pr d testing of cement. on chemical composition, prop ation of Soda-lime glass, propert	rocess of cement, properties and application	ocess of setting on of refractory	
groundwater, treated water).	·			
Module-2: Energy C	Conversion and Storage, Corros	sion (8 hr)		
<b>Corrosion:</b> Introduction, mechanism of electroc and aeration), Stress corrosion, corrosion contra affecting corrosion (EMF, Temperature, pH, relat <b>Self-learning:</b> Corrosion inhibitors.	ol galvanization, anodization ar	nd sacrificial anode n		
Module-3: Water	Technology and Nanotechnolog	gy (8 hr)		
<ul> <li>Water technology: Introduction, sources and nature of impurities of water, hardness of water, determination of temporary, permanent and total hardness by EDTA method, numerical problems, softening of water by Lime-Soda Process, determination of COD, numerical problems. Purification of water by Reverse osmosis and chlorination methods.</li> <li>Nanotechnology: Introduction, properties and engineering application of carbon nanotubes, graphene and nanomaterials for water treatment(metal oxide)</li> <li>Self-learning: Introduction, classification, properties and application of silicon carbide.</li> </ul>				
<b>Polymers</b> : Introduction, types of polymerization	Polymer and Composites (8 hr) free radical mechanism of ad		techniques of	
addition polymerization, molecular weight; nur properties and industrial applications of polyviny <b>Conducting polymers</b> – synthesis and conductin <b>Fibers:</b> Introduction, synthesis, properties and in <b>Plastics:</b> Introduction, synthesis, properties and Teflon.	nber average and weight avera lchloride (PVC) and polystyrene og mechanism of Polyacetylene dustrial applications of Kevlar an industrial applications of poly(	nge, numerical proble nd Polyester.	ems. Synthesis,	
Adhesives: Introduction, synthesis, properties an				

**Polymer Composite:** Introduction, properties and applications of fibre reinforced polymer composites.

**Self-learning: Biopolymer**: Introduction, structural properties, and applications of cellulose and lignin, synthesis of polylactic acid and their application.

#### Module-5:Phase Rule and Analytical Techniques (8 hr)

**Phase rule:** Introduction, Definition of terms: phase, components, degree of freedom, phase rule equation. Phase diagram: Two component-lead-silver system.

**Analytical techniques**: Introduction, principle, instrumentation of potentiometric sensors; its application in the estimation of iron, Optical sensors (colorimetry); its application in the estimation of the copper, pH-sensor (Glass electrode); its application in the determination of pH of beverages.

Self-learning: Determination of viscosity of biofuel and its correlation with temperature.

#### PRACTICAL MODULE

# A – Demonstration (any two) offline/virtual:

A1. Synthesis of polyurethane

A2. Quantitative estimation of Aluminium by precipitation methodA3. Synthesis of

iron oxide nanoparticles

A4. Determination of chloride content in the given water sample by Argentometric method

#### B – Exercise (compulsorily any 4 to be conducted):

B1.Conductometric estimation of acid mixture

B2. Potentiometric estimation of FAS using K2Cr2O7

B3. Determination of pKa of vinegar using pH sensor (Glass electrode)

B4. Determination of rate of corrosion of mild steel by weight loss methodB5.Estimation of total hardness of water by EDTA method

C – Structured Enquiry (compulsorily any 4 to be conducted):

C1. Estimation of Copper present in electroplating effluent by optical sensor (colorimetry)C2. Determination of Viscosity coefficient of lubricant (Ostwald's viscometer)

C3. Estimation of iron in TMT bar by diphenyl amine/external indicator method C4. Estimation of

Sodium present in soil/effluent sample using flame photometry

C5. Determination of Chemical Oxygen Demand(COD) of industrial waste water sample

D – Open Ended Experiments (any two):

D1. Gravimetric estimation of gypsum in Portland cementD2.

Electroplating of desired metal on substrate

D3. Estimation of manganese dioxide in pyrolusite

D4. Analysis of cement for its components

Course Title: COMPUTER AIDED ENGINEERING DRAWING					
Course Code	22CED13/23	CIE Marks	50		
Teaching Hour/Week (L:T:P:S)	2:0:2:0	SEE Marks	50		
Total Hours of Teaching - Learning	40	Total Marks	100		
Credits	03	Exam Hours	03		
Module-1					

#### Introduction: for CIE only

Significance of Engineering drawing, BIS Conventions of Engineering Drawing, Free hand sketching of engineering drawing, Scales. Introduction to Computer Aided Drafting software, Co-ordinate system and reference planes HP, VP, RPP & LPP of 2D/3D environment. Selection of drawing sheet size and scale. Commands and creation of Lines, coordinate points, axes, polylines, square, rectangle, polygons, splines, circles, ellipse, text, move, copy, off-set, mirror, rotate, trim, extend, break, chamfer, fillet and curves.

#### **Orthographic Projections of Points, Lines and Planes:**

Introduction to Orthographic projections: Orthographic projections of points in 1st and 3rd quadrants. Orthographic projections of lines (Placed in First quadrant only).

Orthographic projections of planes viz triangle, square, rectangle, pentagon, hexagon, and circular laminae (Placed in

First quadrant only using change of position method).

Application on projections of Lines & Planes (For CIE only)

**Module-2** 

#### **Orthographic Projection of Solids:**

Orthographic projection of right regular solids (Solids Resting on HP only): Prisms & Pyramids (square, pentagon, hexagon), Cylinders, Cones, Cubes.

Projections of Frustum of cone and pyramids (For practice only, not for CIE and SEE).

#### Module-3

#### **Isometric Projections:**

Isometric scale, Isometric projection of hexahedron (cube), right regular prisms, pyramids, cylinders, cones and spheres. Isometric projection of combination of two simple solids.

#### Conversion of simple isometric drawings into orthographic views.

Problems on applications of Isometric projections of simple objects / engineering components.

Introduction to drawing views using 3D environment (For CIE only).

#### Module-4

#### **Development of Lateral Surfaces of Solids:**

Development of lateral surfaces of right regular prisms, cylinders, pyramids and cones resting with base on HP only. Development of lateral surfaces of their frustums and truncations.

Module-5

#### Multidisciplinary Applications & Practice (For CIE Only):

Free hand Sketching; True free hand, Guided Free hand, Roads, Buildings, Utensils, Hand tools & Furniture's etc Drawing Simple Mechanisms; Bicycles, Tricycles, Gear trains, Ratchets, two-wheeler cart & Four-wheeler carts todimensions etc Electric Wiring and lighting diagrams; Like, Automatic fire alarm, Call bell system, UPS system, Basic power distribution system using suitable software

Basic Building Drawing; Like, Architectural floor plan, basic foundation drawing, steel structures- Frames, bridges, trusses using Auto CAD or suitable software,

Electronics Engineering Drawings- Like, Simple Electronics Circuit Drawings, practice on layers concept.

Graphs & Charts: Like, Column chart, Pie chart, Line charts, Gantt charts, etc. using Microsoft Excel or any suitable software. **Course Outcomes** 

At the end of the course the student will be able to:

**CO 1.** Draw and communicate the objects with definite shape and dimensions

**CO 2.** Recognize and Draw the shape and size of objects through different views

CO 3. Develop the lateral surfaces of the object

CO 4. Create a Drawing views using CAD software.

CO 5. Identify the interdisciplinary engineering components or systems through its graphical representation.

Course Co	itle:	Introduction to C Pr		
		22ESC145/245	CIE Marks	50
•	pe (Theory/Practical	Integrated	SEE Marks	50
/Integrated )			Total Marks	100
	Hours/Week (L:T:P: S)	2:0:2:0	Exam Hours	03
Total Hour	rs of Pedagogy	30 hours	Credits	03
		ODULES		TeachingHour
Executing a <b>Operators</b> a operators, as	<b>Flowcharts, Introduction to C:</b> A "C" program, Constants, Variables an <b>and Expressions, Managing Input/</b> C ssignment operators, increment/ decrei rators. Evaluation of expression, pro-	d Data types. <b>Dutput:</b> Arithmetic operators nent operators, conditional o	relational operators, logical, perators, bit wise operators,	6 hours
	operator precedence and associativity.			
nested if statements. Decision M	Module-II aking and branching: Decision Mak tatements, the else if ladder, Switch Iaking and Looping: While stateme	n statement, The ? : opera	ator, Unconditional control	6 hours
Examples &	Module-III			<u> </u>
Initialization Strings: De	ne dimensional Array, declaration, n, examples and exercises. eclaring and Initializing String Variab hmetic Operations on Characters, String	les, Reading Strings from T	Ferminal, Writing strings to	6 hours
Seleen, Am	Module -IV	ig-nanoning rune tions, examp	nes and excreises.	
User-defined declaration, <b>Structures</b> Members, S	and Recursion : Need for User-defi d Functions, Definition of functions, H Category of functions, Recursion, exa and Unions: Defining a Structures, E Structure Initialization, Copying and co rray of structuresUnions: Union, Size	Return value and their type imples and exercises. Declaration of Structure variation omparing structure variables	s, Function calls, Function ables, Accessing Structure , operations on individual	6 hours
	M	odule-V	•	
Pointers: In	ntroduction, Understanding pointers, A			
variables, I exercises. File Manag	gement: Defining and opening a file			6 hours
variables, I exercises. File Manag handling du	<b>gement:</b> Defining and opening a file ring I/O operations. Examples & exerc	e, closing file, input, output		6 hours
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Practice Programs:
1.Write a C program using printf statement:
a) Print your name and Address.
b) Print the pattern:
+
+ +
+ $+$ $+$
+ +
+
2.Write a C Program using Scanf statements
a) Read int, char and float values from the keyboard and display the same.
3.Write a c program to find :
i) Area of rectangle
ii) Area of Square
iii) Area of circle
4. Write a c program using if, ifelse, nested if and elseif ladder.
i) To find whether number is odd or even.
ii) To find whether number is +ve or –ve.
iii) To find largest of two numbers.
iv) To find largest of three numbers.
<ul><li>5. Write a c program using while , do-while and for looping statement.</li><li>i) Print 1 to 10 numbers using all the three looping statements.</li></ul>
6. Write a c program using arrays:
i) Read 1 to 10 array elements and display the same.
ii) Read float elements and display the same.
iii) Read character and display the same.
7. Write c program using strings:
i. Read a string from keyboard and display the same.
Programming Assignments:
1. C Program to find Mechanical Energy of a particle using $E = mgh+1/2 mv^2$ .
2. C Program to convert Kilometers into Meters and Centimeters.
3. C Program To Check the Given Character is Lowercase or Uppercase or Special Character.
4. Program to balance the given Chemical Equation values x, y, p, q of a simple chemical equation of the type: The task is
to find the values of constants b1, b2, b3 such that the equation is balanced on both sides and it must be the reduced
form.
5. Implement Matrix multiplication and validate the rules of multiplication.
6. Compute $\frac{\sin(x)}{\cos(x)}$ using Taylor series approximation. Compare you result with the built-in library function. Print
both the results with appropriate inferences.
7. Sort the given set of N numbers using Bubblesort.
8. Write functions to implement string operations such as compare, concatenate, string length. Convince the parameter
passing techniques.
9. Implement structures to read, write and compute average-marks and the students scoring above and below the average
marks for a class of N students.
10. Develop a program using pointers to compute the sum, mean and standard deviation of all elements stored in an array of N real numbers

	<b>Communicative English</b>		
Subject code	22ENG16/26	Credit: 0	1
Hours/Week:	1 hour. (Theory)	SEE: 50 Marks	
Total hours: 15	CIE: 50 Marks	SEE: 1.5 hou	rs
Prerequisite: Nil		·	
Course objectives: The course Comm	nunicative English (22ENG16) will enable	the students,	
1. To know about Fundamenta	als of Communicative English and Commun	ication Skills in general.	
2. To train to identify the nua	nces of phonetics, intonation and enhance	pronunciation skills for bette	er Communication
skills.			
	ammar and essentials of important language		
	ocabulary and language proficiency for bette		
5. To learn about Techniques	of Information Transfer through presentation	n.	
	MODULES		TeachingHours
	Module-I		
	nglish : Communicative English, Fundar		21
levels in Communicative English.	Barriers to Effective Communicative En	glish, Different styles and	3 hours
Interpersonal and Intrapersonal Comm	nunication Skills		
Interpersonal and intrapersonal Comm	Module-II		
Introduction to Dhonoting . Dhonot	ic Transcription, English Pronunciation, P	ronunsistion Guidalinas to	
	onounced, Silent and Non silent Letters, Sy		3 hours
Accent, Stress Shift and	onounced, shellt and from shellt Letters, Sy	hables and Structure. Word	5 110015
	often Misspelt. Common Errors in Pronunc	iation	
intoination, optiming reales and words	Module-III		
<b>Basic English Communicative G</b>	rammar and Vocabulary PART - I	Grammar: Basic English	
Grammar and	•	6	3 hours
Parts of Speech, Articles and Preposition. Question Tags, One Word Substitutes, Strong and Weak forms of			
	l Types of Vocabulary – Exercises on it.	C	
	Module -IV		
	mmar and Vocabulary PART - II:Word	ls formation - Prefixes and	
Suffixes,			3 hours
	d Pairs (Minimal Pairs) – Exercises, Tens	e and Types of tenses, The	
Sequence of Tenses (Rules in use of Te			
	Module-V		
	<b>oyment</b> :Information Transfer:Oral Pres		2.1
	c Speaking, Communication Guidelines.	Mother Tongue Influence	3 hours
(MTI), Various Techniques for	sence. Reading and Listening Comprehensi	ong Eveneiges	
	tion, classification, properties and appli		
(carborandum).	tion, classification, properties and appri	cation of smeon carolice	
Text book:			I
	Sanjay Kumar & Pushp Lata, Oxford Unive	rsity Press India Pyt I td - 20	19
•	nguage Communication Skills, (ISBN-97	•	
Learning Solutions, Bengal	0 0	0 01 <i>7</i> 55405 <i>2 7)</i> , 1 dominee	i by minite
Reference books:			
	n by Gajendra Singh Chauhan and Et al, (IS	SBN-978-93-5350-050-4). Ce	engage learning
India Pvt Limited [Latest R			0.0
-	N.P.Sudharshana and C.Savitha, Cambridge	University Press – 2018.	
	unication Skills – Lab Manual cum Worl		lia Pvt Limited
	ISBN-978-93-86668-45-5), 2019.		
4. A Course in Technical Eng	glish – D Praveen Sam, KN Shoba, Camb		).
5. Practical English Usage by	y Michael Swan, Oxford University Press -	2016.	

	Indian Constitution	
Subject code	<b>22ICO17/27</b> Credit: 0	)1
Hours/Week:	1 hour. (Theory) SEE: 50 Marks	
Total hours: 15	CIE: 50 Marks SEE: 1 hours	
Prerequisite: Nil		
<ol> <li>To know about the basic str</li> <li>To know the Fundamental 1</li> <li>To know about our Union 0</li> <li>To know the State Executive</li> </ol>	<b>DN (22ICO17 / 27)</b> will enable the students, ructure of Indian Constitution. Rights (FR's), DPSP's and Fundamental Duties (FD's) of our constitution Government, political structure & codes, procedures. re & Elections system of India.	
5. To learn the Amendments a	and Emergency Provisions, other important provisions given by the const	
	MODULES	TeachingHours
	Module-I	
	e Constitution, Societies before and after the Constitution adoption.	
Introduction to theIndian constitution	Making of the Constitution, Role of the Constituent Assembly.	3 hours
	Module-II tion. Preamble of Indian Constitution & Key concepts of the	
Preamble. Fundamental Rights (FR's building.	s) and its Restriction and limitations in different Complex Situations.	3 hours
Fundamental Duties and its Scope Union Executive – President, Prim	Module -IV	3 hours
	ntary Committees, Important Parliamentary Terminologies. Judicial dia and other Courts, Judicial Reviews and Judicial Activism.	3 hours
	Module-V	
Elections & Electoral Process. Amer today. Emergency Provisions.	A, State Cabinet, Legislature - VS & VP, Election Commission, adment to Constitution, and Important Constitutional Amendments till	3 hours
Elections & Electoral Process. Amer today. Emergency Provisions. <b>Text book:</b> 1. <b>"Constitution of India" (fo</b> Bengaluru. – 2022.		rning Solutions,
Elections & Electoral Process. Amer today. Emergency Provisions. <b>Text book:</b> 1. <b>"Constitution of India"</b> (for Bengaluru. – 2022. 2. <b>"Introduction to the Constit</b> 2008. <b>Reference books:</b> 1. <b>"Constitution of India, Pr</b> al: published by Cengage L	adment to Constitution, and Important Constitutional Amendments till or Competitive Exams) - Published by Naidhruva Edutech Lear	rning Solutions, ): Prentice –Hall, 2. Haries, andet
<ul> <li>Elections &amp; Electoral Process. Ameritoday. Emergency Provisions.</li> <li>Text book: <ol> <li>"Constitution of India" (for Bengaluru. – 2022.</li> <li>"Introduction to the Constite 2008.</li> </ol> </li> <li>Reference books: <ol> <li>"Constitution of India, Pral: published by Cengage L</li> <li>"The Constitution of India Bengaluru.</li> <li>"Samvidhana Odu" - for for for the Constite Constite Constite Constite Constite Constite Constite Constitution of Constitution</li></ol></li></ul>	adment to Constitution, and Important Constitutional Amendments till or Competitive Exams) - Published by Naidhruva Edutech Lear ution of India", (Students Edition.) by Durga Das Basu (DD Basu rofessional Ethics and Human Rights" by Shubham Singles, Charles E earning India, Latest Edition – 2019. ia" by Merunandan K B: published by Merugu Publication, Second Ed Students & Youths by Justice HN Nagamohan Dhas, Sahayana, kere	rning Solutions, ):Prentice –Hall, 2. Haries, andet lition,
<ul> <li>Elections &amp; Electoral Process. Ameritoday. Emergency Provisions.</li> <li>Text book: <ol> <li>"Constitution of India" (feedbengaluru. – 2022.</li> <li>"Introduction to the Constitution 2008.</li> </ol> </li> <li>Reference books: <ol> <li>"Constitution of India, Pral: published by Cengage L</li> <li>"The Constitution of India Bengaluru.</li> <li>"Samvidhana Odu" - for H</li> <li>M.Govindarajan, S.Nataraj</li> </ol> </li> </ul>	adment to Constitution, and Important Constitutional Amendments till or Competitive Exams) - Published by Naidhruva Edutech Lear ution of India", (Students Edition.) by Durga Das Basu (DD Basu) rofessional Ethics and Human Rights" by Shubham Singles, Charles E earning India, Latest Edition – 2019. ia" by Merunandan K B: published by Merugu Publication, Second Ed Students & Youths by Justice HN Nagamohan Dhas, Sahayana, kero an, V.S.Senthilkumar, "Engineering Ethics", Prentice –Hall, 2004.	rning Solutions, ):Prentice –Hall, 2. Haries, andet lition,
<ul> <li>Elections &amp; Electoral Process. Ameritoday. Emergency Provisions.</li> <li>Text book: <ol> <li>"Constitution of India" (for Bengaluru. – 2022.</li> <li>"Introduction to the Constit 2008.</li> </ol> </li> <li>Reference books: <ol> <li>"Constitution of India, Pral: published by Cengage L</li> <li>"The Constitution of India Bengaluru.</li> <li>"Samvidhana Odu" - for 4. M.Govindarajan, S.Nataraj</li> </ol> </li> </ul>	adment to Constitution, and Important Constitutional Amendments till or Competitive Exams) - Published by Naidhruva Edutech Lear ution of India", (Students Edition.) by Durga Das Basu (DD Basu rofessional Ethics and Human Rights" by Shubham Singles, Charles E earning India, Latest Edition – 2019. ia" by Merunandan K B: published by Merugu Publication, Second Ed Students & Youths by Justice HN Nagamohan Dhas, Sahayana, kero an, V.S.Senthilkumar, "Engineering Ethics", Prentice –Hall, 2004.	rning Solutions, ):Prentice –Hall, 2. Haries, andet lition,
Elections & Electoral Process. Amer today. Emergency Provisions. <b>Text book:</b> 1. <b>"Constitution of India"</b> (for Bengaluru. – 2022. 2. <b>"Introduction to the Constit</b> 2008. <b>Reference books:</b> 1. <b>"Constitution of India, Pr</b> al: published by Cengage L 2. <b>"The Constitution of Ind</b> Bengaluru. 3. <b>"Samvidhana Odu" - for</b> 4. M.Govindarajan, S.Nataraj <b>Course outcome (Course Skill Set)</b> At the end of the course the student	adment to Constitution, and Important Constitutional Amendments till or Competitive Exams) - Published by Naidhruva Edutech Lear ution of India", (Students Edition.) by Durga Das Basu (DD Basu rofessional Ethics and Human Rights" by Shubham Singles, Charles E earning India, Latest Edition – 2019. ia" by Merunandan K B: published by Merugu Publication, Second Ed Students & Youths by Justice HN Nagamohan Dhas, Sahayana, kere an, V.S.Senthilkumar, "Engineering Ethics", Prentice –Hall, 2004. will be able to:	rning Solutions, ):Prentice –Hall, 2. Haries, andet lition,
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CO5Remember the Amendments and Emergency Provisions, other important provisions given by the constitution.

	Scientific Foundations of Health		
Subject code	22SFH18/28	Credit: 0	1
Hours/Week:			3
Total hours: 15			
	MODULES		TeachingHours
	Module-I		
Good Health & It's balance for	positive mindset: Health -Importance of He	ealth, Influencing factors	
of Health, Health beliefs, Advantag	es of good health, Health & Behavior, Hea	Ith & Society, Health &	3 hours
	chological disorders-Methods to improve go	od psychological health,	
Changing health habits for good heal			
	Module-II		
	etter future: Developing healthy diet for goo		
	alth, Obesity & overweight disorders and		3 hours
disorders, Fitness components forhea	alth, Wellness and physical function, How to a	void exercise injuries.	
	Module-III	<b>T</b> 1 1 1 1 1 1 1 1	
	lationships : Building communication skills,		
	and communication skills, Relationships fo		3 hours
	s of life (more than a biology), Changing he	ealth behaviours through	
social engineering.	Module -IV		
Avaiding visits and have ful habit	s: Characteristics of health compromising be	horrions Decomining and	
	ion develops, Types of addictions, influenci		3 hours
	and non addictive people & their behaviors. I		5 Hours
as, how to recovery from addiction		silects of addictions Such	
as, now to recovery nom addretion	Module-V		
Preventing & fighting against d	iseases for good health: How to protect	from different types of	
	or good health, Reducing risks & coping		3 hours
	Quality of life, Health & Wellness of youth :		
future, Measuring of health & wealth		6 1 6	
Text book:			
1. "Scientific Foundations	of Health" – Study Material Prepared by D	r. L Thimmesha, Publish	ed in VTU-
University Website.		· · · · · · · · · · · · · · · · · · ·	
-	of Health", (ISBN-978-81-955465-6-5) publis	shed by Infinite Learning S	olutions.
Bangalore – 2022.	, (		,
e	extbook, FOURTH EDITION by Jane Ogden	McGraw Hill Education (	India) Private
Limited - Open University			
Reference books:			
	ond edition) by Charles Abraham, Mark Cor	mer, Fiona Jones and Dar	yl O'Connor –
• •	11 Third Avenue, New York, NY 10017.		
2. HEALTH PSYCHOLOG	GY (Ninth Edition) by SHELLEY E. TAYI	LOR - University of Calif	ornia, Los
Angeles, McGraw Hill Edu	cation (India) Private Limited - Open Univers	ity Press.	
3. SWAYAM / NPTL/ MOO	OCS/ We blinks/ Internet sources/ YouTube	videos and other materials	/ notes.
	Health (Health & Welness) - General Bo	oks published for universit	ty andcolleges
· · · ·	ors and published by the reputed publisher.		
Course outcome (Course Skill Set			
At the end of the course the student			
	yse about Health and wellness (and its Beliefs	s) & It's balance for positive	e mindset.
· · · · ·	estyles for good health for their better future.		
	ring relationships to meet the requirements of g		
0.04	ng risks and harmful habits in their campus	and outside the campus fo	r their bright
future.	future.		
I COF Department of fight of the			
<b>CO5</b> Prevent and fight again	st harmful diseases for good health through po	sitive mindset.	

	Course Title: Mat	hematics-II for Civil Engin	eering stream	
	[As per Choice	e Based Credit System (CBC	CS) scheme]	
		m the academic year 2022-2		
	Course Code	22MATC21	CIE Marks	50
	Credits	04	SEE Marks	50
	Course Type	Integrated		
	Contact Hours/Week (L-T-P)	2-2-2	Total Marks	100
	Contact Hours of Pedagogy	42 hours Theory +10 Lab slots	Exam Hours	03
	Module-1 Vect	tor Calculus	(61	(+3T)
Introd	uction to Vector Calculus in Civil En		(02	
	Differentiation: Scalar and vector fiel		ivative, curl and	
	ence - physical interpretation, solenoida			
Vector	Integration: Line integrals, Surface in	tegrals. Applications to worl	k done by a force and	
	atement of Green's theorem and Stoke'			
	udy: Volume integral and Gauss diverg			
	ations: Heat and mass transfer, oil refir			of streamlines,
velocit	y and acceleration of a moving particle.			
<b>T</b>	Module-2 Ordinary Differentia			
	tance of higher-order ordinary differ			
	-order linear ODEs with constant coeffi			
	on of parameters, Cauchy's and Legendr			
	udy: Formulation and solution of Canti rmined coefficients. Applications: Oscil			incoring
	Levels: L1, L2 and L3)	nations of a spring, fransmis	ssion niles, righway eng	meening.
	Module-3 Partial Differenti	al Faustions (PDFs)	(5L+3T)	
-		ai Equations (I DES)		
Imnor	tance of nartial differential equations			
	tance of partial differential equations	for Civil Engineering appl	lications	us PDF by direct
Format	ion of PDE's by elimination of arbitrary	<b>for Civil Engineering appl</b> constants and functions. So	lications	
Format integra	ion of PDE's by elimination of arbitrary tion. Homogeneous PDEs involving der	<b>for Civil Engineering appl</b> constants and functions. So ivatives with respect to one	l <b>ications</b> lution of nonhomogeneo independent variable onl	
Format integra Lagran	ion of PDE's by elimination of arbitrary tion. Homogeneous PDEs involving der ge's linear PDE. Derivation of one-dime	for Civil Engineering appl constants and functions. So ivatives with respect to one ensional heat equation and w	lications lution of nonhomogeneo independent variable only vave equation.	
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Format integra Lagran Self-St separat Applic Solutio Probler Finite c Newton Numer Self-St Applic approx 10 lab 1 2	ion of PDE's by elimination of arbitrary tion. Homogeneous PDEs involving der ge's linear PDE. Derivation of one-dime <b>udy:</b> Solution of one-dimensional heat ion of variables. <b>ations:</b> Design of structures (vibration of <b>Module-4 Nume</b> <b>tance of numerical methods for discre</b> n of algebraic and transcendental equate ns. differences, Interpolation using Newton n's divided difference formula and Lagr <b>tical integration</b> : Trapezoidal, Simpsor <b>udy:</b> Bisection method, Lagrange's inv <b>ations:</b> Estimating the approximate roo imate solutions to civil engineering prol <b>sessions + 1 repetition class + 1 Lab</b> A Finding gradient, divergent, curl and th Verification of Green's theorem Solutions of Second-order ordinary dif <u>conditions</u> Solution of a differential equation of o	for Civil Engineering apple constants and functions. So civatives with respect to one ensional heat equation and we equation and wave equation of rod/membrane)( <b>RBT Lev</b> rical Methods -1 ete data in the field of Civil ions: Regula-Falsi and Newt 's forward and backward dif range's interpolation formula t's (1/3)rd and (3/8)th rules (" erse Interpolation. ts, extremum values, Area, we blems.( <b>RBT Levels: L1, L2</b> Assessment heir geometrical interpretation fferential equations with initia	lications lution of nonhomogeneor independent variable only vave equation. by the method of els: L1, L2 and L3) (6L+3T) Engineering. on-Raphson methods (on ference formulae, a (All formulae without p without proof). Problems volume, and surface area. and L3) on	y. Solution of ly formulae). roof). Problems.
Format integra Lagran Self-St separat Applic Solutio Probler Finite c Newton Numer Self-St Applic approx 10 lab 1 2 3 4	ion of PDE's by elimination of arbitrary tion. Homogeneous PDEs involving der ge's linear PDE. Derivation of one-dime <b>udy:</b> Solution of one-dimensional heat ion of variables. <b>ations:</b> Design of structures (vibration of <b>Module-4 Nume</b> <b>tance of numerical methods for discre</b> n of algebraic and transcendental equations. differences, Interpolation using Newton n's divided difference formula and Lagr <b>rical integration</b> : Trapezoidal, Simpsor <b>udy:</b> Bisection method, Lagrange's inv <b>ations:</b> Estimating the approximate roo imate solutions to civil engineering prof <b>sessions + 1 repetition class + 1 Lab</b> A Finding gradient, divergent, curl and th Verification of Green's theorem Solutions of Second-order ordinary dif conditions Solution of a differential equation of o different loads	for Civil Engineering apple constants and functions. So civatives with respect to one ensional heat equation and w equation and wave equation of rod/membrane)( <b>RBT Lev</b> rical Methods -1 ete data in the field of Civil ions: Regula-Falsi and Newt 's forward and backward dif range's interpolation formula t's (1/3)rd and (3/8)th rules (respective erse Interpolation. ts, extremum values, Area, w blems.( <b>RBT Levels: L1, L2</b> Assessment heir geometrical interpretation fferential equations with initi scillations of a spring/deflec	lications lution of nonhomogeneor independent variable only vave equation. by the method of els: L1, L2 and L3) (6L+3T) Engineering. on-Raphson methods (on ference formulae, a (All formulae without p without proof). Problems volume, and surface area. and L3) on	y. Solution of ly formulae). roof). Problems.
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Formatintegra Lagran Self-St separat Applic Import Solutio Probler Finite C Newton Numer Self-St Applic approx 10 lab 1 2 3 4	ion of PDE's by elimination of arbitrary tion. Homogeneous PDEs involving der ge's linear PDE. Derivation of one-dime udy: Solution of one-dimensional heat ion of variables. ations: Design of structures (vibration of Module-4 Nume tance of numerical methods for discre- n of algebraic and transcendental equations. differences, Interpolation using Newton n's divided difference formula and Lagr cical integration: Trapezoidal, Simpsor udy: Bisection method, Lagrange's inv ations: Estimating the approximate roo imate solutions to civil engineering prof sessions + 1 repetition class + 1 Lab A Finding gradient, divergent, curl and th Verification of Green's theorem Solutions of Second-order ordinary difficonditions Solution of a differential equation of of different loads Solution of algebraic and transcendent	for Civil Engineering apple constants and functions. So civatives with respect to one ensional heat equation and w equation and wave equation of rod/membrane)( <b>RBT Lev</b> rical Methods -1 ete data in the field of Civil ions: Regula-Falsi and Newt 's forward and backward dif ange's interpolation formula t's (1/3)rd and (3/8)th rules ( erse Interpolation. ts, extremum values, Area, w blems.( <b>RBT Levels: L1, L2</b> Assessment neir geometrical interpretation fferential equations with initi scillations of a spring/deflec	lications lution of nonhomogeneor independent variable only vave equation. by the method of els: L1, L2 and L3) (6L+3T) Engineering. on-Raphson methods (on ference formulae, a (All formulae without p without proof). Problems volume, and surface area. and L3) on ial/boundary tion of a beam with	y. Solution of ly formulae). roof). Problems.
Formati integra Lagran Self-St separat Applic Import Solutio Probler Finite of Newton Numer Self-St Applic 1 2 3 4 5 6	ion of PDE's by elimination of arbitrary tion. Homogeneous PDEs involving der ge's linear PDE. Derivation of one-dime udy: Solution of one-dimensional heat ion of variables. ations: Design of structures (vibration of Module-4 Nume tance of numerical methods for discre- n of algebraic and transcendental equations. differences, Interpolation using Newton a's divided difference formula and Lagr cical integration: Trapezoidal, Simpsor udy: Bisection method, Lagrange's inv ations: Estimating the approximate roo imate solutions to civil engineering prof sessions + 1 repetition class + 1 Lab A Finding gradient, divergent, curl and th Verification of Green's theorem Solutions of Second-order ordinary dif conditions Solution of a differential equation of o different loads Solution of algebraic and transcendent method	for Civil Engineering apply constants and functions. So ivatives with respect to one ensional heat equation and we equation and wave equation of rod/membrane)( <b>RBT Lev</b> rical Methods -1 ete data in the field of Civil ions: Regula-Falsi and Newt 's forward and backward dif ange's interpolation formula t's (1/3)rd and (3/8)th rules ( erse Interpolation. ts, extremum values, Area, we blems.( <b>RBT Levels: L1, L2</b> <b>Assessment</b> neir geometrical interpretation fferential equations with initial scillations of a spring/deflec tion and wave equation al equations by Regula-Falsi	lications lution of nonhomogeneor independent variable only vave equation. by the method of els: L1, L2 and L3) (6L+3T) Engineering. on-Raphson methods (on ference formulae, a (All formulae without p without proof). Problems volume, and surface area. and L3) on ial/boundary tion of a beam with i and Newton-Raphson	y. Solution of ly formulae). roof). Problems.
Format integra Lagran Self-St separat Applic Import Solutio Probler Finite o Newton Numer Self-St Applic approx 10 lab 1 2 3 4 5	ion of PDE's by elimination of arbitrary tion. Homogeneous PDEs involving der ge's linear PDE. Derivation of one-dime udy: Solution of one-dimensional heat ion of variables. ations: Design of structures (vibration of Module-4 Nume tance of numerical methods for discre- n of algebraic and transcendental equations. differences, Interpolation using Newton n's divided difference formula and Lagr cical integration: Trapezoidal, Simpsor udy: Bisection method, Lagrange's inv ations: Estimating the approximate roo imate solutions to civil engineering prof sessions + 1 repetition class + 1 Lab A Finding gradient, divergent, curl and th Verification of Green's theorem Solutions of Second-order ordinary difficonditions Solution of a differential equation of of different loads Solution of algebraic and transcendent	for Civil Engineering apple constants and functions. So civatives with respect to one ensional heat equation and we equation and wave equation of rod/membrane)( <b>RBT Lev</b> rical Methods -1 ete data in the field of Civil ions: Regula-Falsi and Newt 's forward and backward dif range's interpolation formula a's (1/3)rd and (3/8)th rules ( erse Interpolation. ts, extremum values, Area, we blems.( <b>RBT Levels: L1, L2</b> Assessment heir geometrical interpretation fferential equations with initian scillations of a spring/deflec tion and wave equation al equations by Regula-Falsi ton's forward and backward	lications lution of nonhomogeneor independent variable only vave equation. by the method of els: L1, L2 and L3) (6L+3T) Engineering. on-Raphson methods (on ference formulae, a (All formulae without p without proof). Problems volume, and surface area. and L3) on ial/boundary tion of a beam with i and Newton-Raphson difference formula	y. Solution of ly formulae). roof). Problems.

10	Solution of ODE of first order and first degree by Runge-Kutta 4th order and Milne's
	predictor-corrector method
	ested software's: Mathematica/MatLab/Python/Scilab
	se outcome (Course Skill Set)
	end of the course the student will be able to:
CO	1 Understand the applications of vector calculus refer to solenoidal, irrotational vectors, line integral and surface integral.
CO	2 Analyze the solution of higher order ordinary differential equations
COS	3 Demonstrate partial differential equations and their solutions for physical interpretations.
CO 4	
	phenomena.
CO	5 Get familiarize with modern mathematical tools namely
	Mathematica/MatLab/Python/Scilab
Sugge	ested Learning Resources:
	s (Title of the Book/Name of the author/Name of the publisher/Edition and Year)
Text	
	<b>B. S. Grewal</b> : "Higher Engineering Mathematics", Khanna publishers, 44th Ed., 2021.
	<b>E. Kreyszig</b> : "Advanced Engineering Mathematics", John Wiley & Sons, 10th Ed., 2018.
	ence Books
	<b>V. Ramana:</b> "Higher Engineering Mathematics" McGraw-Hill Education, 11th Ed., 2017
	Srimanta Pal & Subodh C. Bhunia: "Engineering Mathematics" Oxford University Press, 3rd Ed.,
2016.	
	N.P Bali and Manish Goyal: "A textbook of Engineering Mathematics" Laxmi
	Publications, 10th Ed., 2022.
	C. Ray Wylie, Louis C. Barrett: "Advanced Engineering Mathematics" McGraw – Hill Book Co.,
	ork, 6th Ed., 2017.
	Gupta C.B, Sing S.R and Mukesh Kumar: "Engineering Mathematic for Semester I and II", Mc-Graw
	ducation(India) Pvt. Ltd 2015.
	H. K. Dass and Er. Rajnish Verma: "Higher Engineering Mathematics" S. Chand
	Publication, 3rd Ed., 2014.
	James Stewart: "Calculus" Cengage Publications, 7th Ed., 2019.
	<b>David C Lay:</b> "Linear Algebra and its Applications", Pearson Publishers, 4th Ed., 2018.
	Gareth Williams: "Linear Algebra with applications", Jones Bartlett Publishers Inc., 6th
	Ed., 2017.

Course Title:	Physics for CV Stream		
Course Code:	22PHYC12/22	CIE Marks	50
Course Type	Integrated	SEE Marks	50
(Theory/Practical/Integrated)		Total Marks	100
Teaching Hours/Week (L:T:P: S)	2:2:2:0	Exam Hours	03
Total Hours of Pedagogy	40 hours Theory + 10-12 Lab slots	Credits	04
	Module-1 (8 Hours)		

#### Module -I: Oscillations and Shock waves:

**Oscillations:** Simple Harmonic motion (SHM), Differential equation for SHM (No derivation), Sprigs: Stiffness Factor and its Physical Significance, Series and Parallel combination of springs (Derivation), Types of Springs and their applications. Theory of Damped oscillations (Qualitative), Types of Damping (Graphical Approach). Engineering applications of Damped oscillations, Theory of Forced oscillations (Qualitative), Resonance, Sharpness of resonance. Numerical Problems.

Shock waves: Mach number and Mach Angle, Mach Regimes, Definition and Characteristics of Shock waves, Construction and working of Reddy Shock tube, Applications of Shock Waves, Numerical problems.

Module-2 (8 Hours)

#### **Pre-requisites: Basics of Oscillations**

#### Self-learning: Simple Harmonic motion, Differential equation for SHM

# Elasticity

Stress-Strain Curve, Stress hardening and softening. Elastic Moduli, Poisson's ratio, Relation between Y, n and  $\sigma$  (with derivation), mention relation between K, Y and  $\sigma$ , limiting values of Poisson's ratio. Beams, Bending moment and derivation of expression, Cantilever and I section girder and their Engineering Applications, Elastic materials (qualitative). Failures of engineering materials - Ductile fracture, Brittle fracture, Stress concentration, Fatigue and factors affecting fatigue (only qualitative explanation), Numerical problems.

# Pre requisites: Elasticity, Stress & Strain

Self-learning: Stress-Strain Curve

#### Module-3 (8 Hours)

#### Acoustics, Radiometry and Photometry:

Acoustics: Introduction to Acoustics, Types of Acoustics, Reverberation and reverberation time, Absorption power and Absorption coefficient, Requisites for acoustics in auditorium, Sabine's formula (derivation), Measurement of absorption coefficient, Factors affecting the acoustics and remedial measures, Sound Insulation and its measurements. Noise and its Measurements, Impact of Noise in Multi-storied buildings.

**Radiometry and Photometry:** Radiation Quantities, Spectral Quantities, Relation between luminance and Radiant quantities, Reflectance and Transmittance, Photometry (cosine law and inverse square law).

#### Prerequisites: Basics of Sound, Waves & light properties.Self-learning: Introduction to acoustics.

Module-4 (8 Hours)

#### Photonics:

LASER

Properties of a LASER Beam, Interaction of Radiation with Matter, LASER action, Population Inversion, Metastable State, Requisites of a LASER System, Semiconductor LASER, LASER Range Finder, LIDAR, Road Profiling, Bridge Deflection, Speed Checker, Numerical Problems.

#### **Optical Fiber**

Principle and Construction of Optical Fibers, Acceptance angle and Numerical Aperture (NA), Expression for NA, Modes of Propagation, Attenuation and Fiber Losses, Fiber Optic Displacement Sensor, Fiber Optic Temperature Sensor, Numerical Problems

#### re requisite: Properties of light.

Self-learning: Total Internal Reflection.

#### Module-5 (8 Hours)

#### Natural hazards and Safety

Introduction, Earthquake, (general characteristics, Physics of earthquake, Richter scale of measurement and earth quake resistant measures), Tsunami (causes for tsunami, characteristics, adverse effects, risk reduction measures, engineering structures to withstand tsunami), Landslide (causes such as excess rain fall, geological structure, human excavation etc., types of land slide, adverse effects, engineering solution for landslides). Forest Fires and detection using remote sensing. Fire hazards and fire protection, fire-proofing materials, fire safety regulations and firefighting equipment-Prevention and safety measures. Numerical Problems.

Pre requisite: Oscillations. Self-learning: Richter scale.

#### Course outcome (Course Skill Set)

At the end of the course the student will be able to:

- CO1 **Elucidate** the concepts in oscillations, waves, elasticity and material failures
- CO2 Summarize concepts of acoustics in buildings and explain the concepts in radiation and photometry
- CO3 **Discuss** the principles photonic devices and their application relevant to civil engineering.
- CO4 **Describe** the various natural hazards and safety precautions.

CO5 **Practice** working in groups to conduct experiments in physics and **perform** precise and honest measurements.

#### Laboratory Component:

Any Ten Experiments have to be completed from the list of experiments

Note: The experiments have to be classified into

a) Exercise

- b) Demonstration
- c) Structured Inquiry

d) Open Ended

Based on the convenience classify the following experiments into above categories. Select at least one simulation/spreadsheet activity.

#### List of Experiments

- 1. Determination of Young's modulus of the material of the given bar Uniform Bending.
- 2. Determination of Rigidity modulus of the Material of the wire using Torsional Pendulum.
- 3. Study of Forced Mechanical Oscillations and Resonance.
- 4. Study of the frequency response of Series & Parallel LCR circuits.
- 5. Determination of Fermi Energy of the given Conductor.
- 6. Determination of Resistivity by Four Probe Method.
- 7. Determination of effective spring constant of the given springs in series and parallel combinations.
- 8. Determination of Young's modlus of the material of the given bar Single Cantilever.
- 9. Determination of the the Moment of Inertia of the given irregular body using torsional pendulum.
- 10. Determination of Wavelength of Laser using Diffraction Grating.
- 11. Determination of Acceptance angle and Numerical Aperture of the given Optical Fiber.
- 12. Determination of the Radius of Curvature of the given Plano Convex Lens by setting Newton's Rings.
- 13. Step Interactive Physical Simulations.
- 14. Study of motion using spread Sheets
- 15. Application of Statistics using Spread Sheets.
- 16. PHET Interactive Simulations :
- 17. Fly wheel
- 18. Interference of air wedge

(https://phet.colorado.edu/en/simulations/filter?subjects=physics&type=html,prototype)

1	ENGINEERING MECHANICS		
Subject code	22CIV13/23	Credit:	03
Hours/Week:	2 hours.	SEE: 50 Mar	rks
	(Theory)		
Total hours: 50			
	MODULES		TeachingHours
Classification of force system of forces, resolution of a moments, couple, Resultant	<b>Module-I</b> e system: Basic dimensions and a, principle of transmissibility of a force, Free body diagrams, mo of coplanar concurrent force s	force, composition ment, Principle of	10 hours
coplanar non-concurrent lor	ce system, Numerical examples.		
Equilibrium of coplanar parallel for	<b>Module-II</b> <b>n:</b> Equilibrium of coplanar concurrent for e system, types of beams, types of lo ent force system, support reactions of s merical examples.	adings, types of supports,	10 hours
	Module-III		
perfect trusses by themethod examples.	nction, Classification of trusses, a l of joints and method of sections nb friction, equilibrium of blocks on hor	Numerical	10 hours
blocks on inclined plane, ladder friction		izontai prano, equinoritain or	
	Module -IV		
circle, semicircle, quadrant a centroid of composite areas a <b>Moment of inertia of plane</b> polar moment of inertia, pu theorem, perpendicular axis t and circular areas from the m	roduction, Locating the centroid of and sector of a circle using me nd simple built up sections, Num <b>areas:</b> Introduction, Rectangula roduct of inertia, radius of gyn heorem, moment of inertia of re- nethod of integration, moment of	thod of integration, erical examples. r moment of inertia, ration, parallel axes ctangular, triangular	10 hours
areas and simple built up sect			
Vinematica	Module-V		
acceleration due to gravity,Nu Projectiles: Introduction, num <b>Kinetics:</b> Introduction, D 'Ale application in-plane motion a examples.	Displacement, speed, velocity, ac umerical examples on linear moti perical examples on projectiles. embert's principle of dynamic eq nd connected bodies including pu	on uilibrium and its	10 hours
Engineering Mechanics, 20 2. Kolhapure B K, Elements o <b>Reference books:</b> 1. Beer F.P. and Johnston E. R 2. Irving H. Shames, Engineer 3. Hibbler R. C., Engineering 4. Timoshenko S, Young D. H 5. Bhavikatti S S, Engineering	an Beohar and Ahmad Ali Khan, 15,Laxmi Publications. f Civil Engineering and Engineerin a., Mechanics for Engineers, Statics ing Mechanics, 2019, Prentice-Hal Mechanics: Principles of Statics an a., Rao J. V., Engineering Mechanic Mechanics, 2019, New Age Intern uresh Kumar K, Engineering Mech	g Mechanics, 2014, EBF and Dynamics, 1987, M l. d Dynamics, 2017, Pears s, 5th Edition, 2017, Pea ational	PB IcGraw Hill. son Press. arson Press.

	outcome (Course Skill Set)
t the end	of the course the student will be able to:
<b>CO1</b>	Compute the resultant of a force system and resolution of a force
CO2	Comprehend the action for forces, moments, and other types of loads on rigid
LUZ	bodies and compute the reactive forces
<b>CO</b> 3	Analyse the frictional resistance offered by different planes
<b>CO4</b>	Locate the centroid and compute the moment of inertia of sections
CO5	Analyze the bodies in motion

Course Title: IN	TRODUCTION TO MECHANI	CAL ENGINEERIN	G
Course Code:	22ESC144/244	CIE Marks	50
Course Type	Theory	SEE Marks	50
(Theory/Practical/Integrated)		Total Marks	100
Teaching Hours/Week (L:T:P	: S) 3:0:0:0	Exam Hours	03
Total Hours of Pedagogy	40 hours	Credits	03
<b>Course Learning Objectives</b>			
CLO 1. Acquire a basic unde	erstanding about scope of mechani	cal engineering, funda	amentals about
	entional energy sources.		
CLO 2. Acquire a basic know	wledge about conventional and ad	vanced manufacturing	<b>r</b>
processes.			
CLO 3. Acquiring a basic und	derstanding about IC engines, prop	ulsive devices and air-	-
conditioner.			
	owledge about power transmission		
CLO 5. Acquiring a basic insi	ight into future mobility and mecha	tronics and robotics.	
<b>Teaching-Learning Process</b>			
Adopt different types	s of teaching methods to develop	the outcomes throug	h Power Point
presentations and Vid	leo demonstrations or Simulations.		
• Arrange visits to show	w the live working models other that	n laboratory topics.	
• Adopt collaborative (	Group Learning) Learning in the cl	ass.	
Adopt Problem Based	d Learning (PBL), which foster stu	dents' Analytical skill	s and develops
thinking skills such as	s evaluating, generalizing, and anal	yzing information.	
	Module-1 (8 hours)		
Introduction to Mechanical	Engineering (Overview only):		
Role of Mechanical Engineer	ring in Industries and Society- En	nerging Trends and T	echnologies in
different sectors such as Energ	gy, Manufacturing, Automotive, Ae	erospace, and Marine s	sectors.
<b>Steam Formation and Appli</b>	cation:	-	
Modes of heat transfer, Stea	um formation, Types of steam, St	team properties and a	applications of
steam (simple numerical prob	lems).		
<b>Energy Sources and Power I</b>	·		
	Hydel power plant, Thermal pow	er plant, nuclear pow	er plant, Solar
power plant, Tidal power plan			-
	Module-2 (8 hours)		
Machine Tool Operations:			
Lathe: Principle of working o	of a center lathe, lathe operations: T	urning, facing, knurlin	ng, thread
cutting, taper turning by swive	<b>U I</b>		
Dulling Marking Westing	f simple duilling messlains duilling	1.111 1	• •

**Drilling Machine**: Working of simple drilling machine, drilling operations: drilling, boring, reaming, tapping, counter sinking, counter boring,

**Milling Machine**: Working and types of milling machine, milling operations: plane milling, end milling and slot milling.

(No sketches of machine tools, sketches to be used only for explaining the operations).

**Introduction to Advanced Manufacturing Systems:** Introduction, components of CNC, advantages and applications of CNC, 3D printing.

# Module-3 (8 hours)

**Introduction to IC Engines**: Components and working principles, 4-Stroke Petrol and Diesel engines, Application of IC Engines, performance of IC engines (Simple numerical).

**Introduction to Refrigeration and Air Conditioning**: Principle of refrigeration, Refrigerants and their desirable properties. Working principle of VCR refrigeration system, working principle of room air conditioner & Applications of air Conditioners

# Module-4 (8 hours)

# Mechanical Power Transmission:

**Gear Drives**: Types - spur, helical, bevel, worm and rack and pinion, velocity ratio, simple and compound gear trains (simple numerical problems)

**Belt Drives**: Introduction, Types of belt drives (Flat and V-Belt Drive), length of the belt and tensions ratio (simple numerical problems)

Joining Processes: Soldering, Brazing and Welding, Definitions, classification of welding process, Arc welding, Gas welding, (types of flames), TIG welding, MIG welding and Fusionwelding.

# Module-5 (8 hours)

**Insight into future mobility technology;** Electric and Hybrid Vehicles, Components of Electric and Hybrid Vehicles. Advantages and disadvantages of Electric Vehicles (EVs) and Hybrid vehicles.

**Introduction to Mechatronics and Robotics:** open-loop and closed-loop mechatronic systems. Joints & links, Robot anatomy, Applications of Robots in material handling, processing and assembly and inspection.

# Course outcome (Indicative)

At the end of the course the student will be able to:

- CO1 Explain the role of mechanical engineering in industry and society, fundamentals of steam and non-conventional energy sources
- CO2 Describe different conventional and advanced machining processes, IC engines, propulsive devices, air-conditioning, refrigeration.
- CO3 Explain different gear drives, gear trains, aspects of future mobility and fundamentals of robotics
- CO4 Determine the condition of steam and its energy, performance parameters of IC engines, velocity ratio and power transmitted through power transmission systems.
- CO5 Explain the Working Principle of EV vehicles and concepts of Mechatronics and Robotics

# **Suggested Learning Resources:**

Test Books (Title of the Book/Name of the author/Name of the publisher/Edition and Year)

- 1. Elements of Mechanical Engineering, K R Gopala Krishna, Subhash Publications, 2008
- 2. Elements of Workshop Technology (Vol. 1 and 2), Hazra Choudhry and Nirzar Roy, MediaPromoters and Publishers Pvt. Ltd., 2010.

# **Reference Books**

1. An Introduction to Mechanical Engineering, Jonathan Wickert and Kemper Lewis, Third Edition, 2012

		Professional Writing Skills in Engli	sh	
	ibject code	22PWS16/26	Credit: (	
He	ours/Week:	1 hour. (Theory)	SEE: 50 Marks	5
Tot	al hours: 15	CIE: 50 Marks	SEE: 1.5 hour	ſS
		MODULES		TeachingHours
parts of speed (Concord Rul	ch, Use of verbs and phr les), Common errors in S	Module-I Writing and Speaking English: Commo rasal verbs, Auxiliary verbs and their forms, Subject-verb agreement, Sequence of Tenses	Subject Verb Agreement	3 hours
in Tenses. We	ords Confused/Misused.			
Introduction writing, Sent	andConclusion, Importa	Module-II iting: Organizing Principles of Paragraph ance of Proper Punctuation, Precise writing Corrections activities. Misplaced modifiers, sion of words.	g and Techniques in Essay	3 hours
		Module-III		
writing, Sign Technical Pro	ificance of Reports, Typoposals, Characteristics	ractices: Technical writing process, Introdu pes of Reports. Introduction to Technical Pro of Technical Proposals. Scientific Writing P & Sentence Improvement, Cloze Test and T	roposals Writing, Types of Process. Grammar – Voices	3 hours
		Module -IV		
Barriers, Im Applications,	proving Listening Sk Types of official/emple	<b>mployment:</b> Listening Comprehension, Typ ills. Reading Comprehension, Tips for oyment/business Letters, Resume vs. Bio D nails, Blog Writing and Memos.	effective reading. Job	3 hours
		Workplace: Group Discussion and	Professional Interviews,	
Characteristic	es and Strategies of a	GD and PI's, Intra and Interpersonal	Communication Skills at	
workplace, N	Ion-Verbal Communicat	tion Skills and itsimportance in GD and In	terview. Presentation skills	3 hours
		s, Strategies of Presentation Skills.		
2) <b>"F</b>	rofessional Writing Ski	<b>ills in English"</b> published by Fillip Learning per AICTE 2018 Model Curriculum) (ISBN Edition 2019].		
Reference	books:			
2) Teo Ind	chnical Communication lia Pvt Limited [Latest R		3N-978-93-5350-050-4), Cer	
Oz	xford University Press 20	<ul> <li>n – Principles and Practice, Third Edition by 017.</li> <li>mmar &amp; Composition by Wren and Martin,</li> </ul>		
5) Eff	fective Technical Comm	nunication – Second Edition by M Ashraf R	izvi, McGraw Hill Education	n (India) Private
Course outo	come (Course Skill Set)			
	of the course the student			
CO1		tify the Common Errors in Writing and Spea	king.	
		nical writing and Presentation skills.		
CO3		osals properly and make them to Write good	technical reports.	
CO4		nd Workplace communication skills.		
CO5	To learn about Technicu	ues of Information Transfer through presenta	('	

Subject Code	Subject		Stream	Th– Tut-Pr	Credits
22KSK17 / 27	SAMSKRUT	HIKA KANNADA	Humanities	1 - 0 - 0	01
			and Social		
			Sciences		
			(H.S.S)		
CIE : 50	SEE : 50	SEE : 1 hours 3	0 Minutes	Te	otal : 15 Hou

### ಸಾಂಸ್ಕೃತಿಕ ಕನ್ನಡ - ಕನ್ನಡ ಬಲ್ಲ ಮತ್ತು ಕನ್ನಡ ಮಾತ್ಯಭಾಷೆಯ ವಿದ್ಯಾರ್ಥಿಗಳಿಗೆ ನಿಗದಿಪಡಿಸಿದ ಪಠ್ಯಕ್ರಮ

Course objectives : ಸಾಂಸ್ಕೃತಿಕ ಕನ್ನಡ ಪಠ್ಯ ಕಲಿಕೆಯ ಉದ್ದೇಶಗಳು:

The course (22KSK17/27) will enable the students,

- 1. ಪದವಿ ವಿದ್ಯಾರ್ಥಿಗಳಾಗಿರುವುದರಿಂದ ಕನ್ನಡ ಭಾಷೆ, ಸಾಹಿತ್ಯ ಮತ್ತು ಸಂಸ್ಕೃತಿಯ ಪರಿಚಯ ಮಾಡಿಕೊಡುವುದು.
- 2. ಕನ್ನಡ ಸಾಹಿತ್ಯದ ಪ್ರಧಾನ ಭಾಗವಾದ ಆಧುನಿಕಪೂರ್ವ ಮತ್ತು ಆಧುನಿಕ ಕಾವ್ಯಗಳನ್ನು ಪರಿಚಯಿಸಿವುದು.
- 3. ವಿದ್ಯಾರ್ಥಿಗಳಲ್ಲಿ ಸಾಹಿತ್ಯ ಮತ್ತು ಸಂಸ್ಕೃತಿಯ ಬಗ್ಗೆ ಅರಿವು ಹಾಗೂ ಆಸಕ್ತಿಯನ್ನು ಮೂಡಿಸುವುದು.
- 4. ತಾಂತ್ರಿಕ ವ್ಯಕ್ತಿಗಳ ಪರಿಚಯವನ್ನು ಹಾಗೂ ಅವರುಗಳ ಸಾಧಿಸಿದ ವಿಷಯಗಳನ್ನು ಪರಿಚಯಿಸುವುದು.
- 5. ಸಾಂಸ್ಕೃತಿಕ, ಜನಪದ ಹಾಗೂ ಪ್ರವಾಸ ಕಥನಗಳ ಪರಿಚಯ ಮಾಡಿಕೊಡುವುದು.

	ಘಟಕ -1 ಕನ್ನಡ ಸಂಸ್ಕೃತಿ ಮತ್ತು ಭಾಷೆ ಕುರಿತಾದ ಲೇಖನಗಳು (03 hours of pedagogy)
-	
	ಕರ್ನಾಟಕ ಸಂಸ್ಕೃತಿ - ಹಂಪ ನಾಗರಾಜಯ್ಯ
2.	
3.	ಆಡಳಿತ ಭಾಷೆಯಾಗಿ ಕನ್ನಡ - ಡಾ. ಎಲ್. ತಿಮ್ಮೇಶ ಮತ್ತು ಪ್ರೋ. ವಿ. ಕೇಶವಮೂರ್ತಿ
	ಘಟಕ - 2 ಆಧುನಿಕ ಪೂರ್ವದ ಕಾವ್ಯ ಭಾಗ (03 hours of pedagogy)
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
	ಘಟಕ -3 ಆಧುನಿಕ ಕಾವ್ಯಭಾಗ (03 hours of pedagogy)
1.	ಡಿವಿಜಿ ರವರ ಮಂಕುತಿಮ್ಮನ ಕಗ್ಗದಿಂದ ಅಯ್ದ ಕೆಲವು ಭಾಗಗಳು
2.	ಕುರುಡು ಕಾಂಚಾಣ : ದಾ.ರಾ. ಬೇಂದ್ರೆ
3.	ಹೊಸಬಾಳಿನ ಗೀತೆ : ಕುವೆಂಪು
	ಘಟಕ - 4 ತಾಂತ್ರಿಕ ವ್ಯಕ್ತಿಗಳ ಪರಿಚಯ (03 hours of pedagogy)
1.	ಡಾ. ಸರ್. ಎಂ. ವಿಶ್ವೇಶ್ವರಯ್ಯ : ವ್ಯಕ್ತಿ ಮತ್ತು ಐತಿಹ್ಯ – ಎ. ಎನ್. ಮೂರ್ತಿರಾವ್
2.	ಕರಕುಶಲ ಕಲೆಗಳು ಮತ್ತು ಪರಂಪರೆಯ ವಿಜ್ಞಾನ : ಕರೀಗೌಡ ಬೀಚನಹಳ್ಳಿ
	ಘಟಕ - 5 ಸಾಂಸ್ಕೃತಿಕ, ಜನಪದ ಕಥೆ ಮತ್ತು ಪ್ರವಾಸ ಕಥನ (03 hours of pedagogy)
1.	ಯುಗಾದಿ : ವಸುಧೇಂದ್ರ
2.	ಮೆಗಾನೆ ಎಂಬ ಗಿರಿಜನ ಪರ್ವತ : ಹಿ.ಚಿ. ಬೋರಲಿಂಗಯ್ಯ
	outcome (Course Skill Set)
	್ಕೃತಿಕ ಕನ್ನಡ (22KSK17/27) ಪಠ್ಯ ಕಲಿಕೆಯ ನಂತರ ವಿದ್ಯಾರ್ಥಿಗಳಲ್ಲಿ :
	end of the course the student will be able to:
C01	ಕನ್ನಡ ಭಾಷೆ, ಸಾಹಿತ್ಯ ಮತ್ತು ಕನ್ನಡದ ಸಂಸ್ಕೃತಿಯ ಕುರಿತು ಅರಿವು ಮೂಡಿರುತ್ತದೆ.
C02	ಕನ್ನಡ ಸಾಹಿತ್ಯದ ಆಧುನಿಕ ಪೂರ್ವ ಮತ್ತು ಆಧುನಿಕ ಕಾವ್ಯಗಳನ್ನು ಸಾಂಕೇತಿಕವಾಗಿ ಕಲಿತು ಹೆಚ್ಚಿನ ಓದಿಗೆ
	ಮತ್ತು ಜ್ಞಾನಕ್ಕೆ ಸ್ಪೂರ್ತಿ ಮೂಡುತ್ತದೆ.
CO3	ವಿದ್ಯಾರ್ಥಿಗಳಲ್ಲಿ ಸಾಹಿತ್ಯ ಮತ್ತು ಸಂಸ್ಕೃತಿಯ ಬಗ್ಗೆ ಅರಿವು ಹಾಗೂ ಆಸಕ್ತಿಯನ್ನು ಹೆಚ್ಚಾಗುತ್ತದೆ.
CO4	ತಾಂತ್ರಿಕ ವ್ಯಕ್ತಿಗಳ ಪರಿಚಯ ಹಾಗೂ ಅವರುಗಳ ಸಾಧಿಸಿದ ವಿಷಯಗಳನ್ನು ತಿಳಿದುಕೊಂಡು ನಾಡಿನ ಇನ್ನಿತರ
	ವ್ಯಕ್ತಿಗಳ ಬಗ್ಗೆ ತಿಳಿದುಕೊಳ್ಳಲು ಕೌತುಕತೆ ಹೆಚ್ಚಾಗುತ್ತದೆ.
C05	ಸಾಂಸ್ಕೃತಿಕ, ಜನಪದ ಹಾಗೂ ಪ್ರವಾಸ ಕಥನಗಳ ಪರಿಚಯ ಮಾಡಿಕೊಡುವುದು.

5	ಸಾಂಸ್ಕೃತಿಕ ಕನ್ನಡ
5	- 9 at at and a state of the set of the
	ತಾ. ಹಿ.ಚಿ.ಬೋರಲಿಂಗಯ್ಯ ಮತ್ತು ಡಾ. ಎಲ್. ತಿಮ್ಮೇಶ,
	ಪ್ರಕಟಣೆ : ಪ್ರಸಾರಾಂಗ,
	ವಿಶ್ವೇಶ್ವರಯ್ಯ ತಾಂತ್ರಿಕ ವಿಶ್ವವಿದ್ಯಾಲಯ, ಬೆಳಗಾವಿ.
ವಿಶೇಷ ಸೂಚನೆ : 1. ಮೇಲಿನ	ರ ಪಠ್ಯಕ್ರಮಕ್ಕೆ ಸೀಮಿತವಾಗಿ ಅಂತಿಮ ಪರೀಕ್ಷೆಯ ಪ್ರಶ್ನೆಪತ್ರಿಕೆ ಇರುತ್ತದೆ.
2. ಮೇಲಿನ	i ಪಠ್ಯಕ್ರಮವನ್ನು ಹೊರತುಪಡಿಸಿದ ಸಾಂಸ್ಕೃತಿಕ ಕನ್ನಡ ಪಠ್ಯಪುಸ್ತಕದಲ್ಲಿನ  ಉಳಿದ ಪದ್ಯ &
	ಾಗ ಹಾಗೂ ಇತರ ಲೇಖನಗಳನ್ನು ಹೆಚ್ಚುವರಿ ಪೂರಕ ಓದಿಗಾಗಿ ಬಳಸಿಕೊಳ್ಳಬಹುದು. ಅಂತಿಮ ಯಲ್ಲಿ ಈ ಪಾಠಗಳಿಂದ ಪ್ರಶ್ನೆಗಳನ್ನು ಕೇಳಲಾಗುವುದಿಲ್ಲ.
3. ಹೆಚ್ಚಿನ	ಮಾಹಿತಿ ಮತ್ತು ವಿವರಣೆಗಳಿಗೆ ಡಾ. ಎಲ್. ತಿಮ್ಮೇಶ (9900832331) ಇವರನ್ನು ಸಂಪರ್ಕಿಸಿ.
4. ಮಾದರಿ	) ಪ್ರಶ್ನೆಪತ್ರಿಕೆ, ಕೋರ್ಸ್ ಆಯ್ಕೆ ಮಾಹಿತಿ, ಅಧ್ಯಯನ ಸಾಮಗ್ರಿ & ಬಹು ಆಯ್ಕೆ ಮಾದರಿಯ
ಪ್ರಶ್ನೆಗಳ	ಳ ಕೈಪಿಡಿಗಾಗಿ ವಿಶ್ವವಿದ್ಯಾಲಯದ ವೆಬ್ ಸೈಟ್ ನೋಡುವುದು.

- For active participation of students instruct the students to prepare Flow
   Organising Group wise discussions Connecting to placement activities
   Quizzes and Discussions, Seminars and assignments.

# ಬಳಕೆ ಕನ್ನಡ - baLake Kannada (Kannada for Usage)

# ಕನ್ನಡ ಕಲಿಕೆಗಾಗಿ <u>ನಿಗದಿ</u>ಪಡಿಸಿದ ಪಠ್ಯಪುಸ್ತಕ - (Prescribed Textbook to Learn Kannada)

Subject Code	Subject	Stream	Th– Tut-Pr	Credits
22KBK17 / 27	BALAKE KANNAI	DA Humanities	1 - 0 - 0	01
		and Social		
		Sciences		
		(H.S.S)		
CIE : 50	SEE : 50	SEE : 1 hours 30 Minutes		Tota

Total : 15 Hours

# Course objectives : ಬಳಕೆ ಕನ್ನಡ ಪಠ್ಯ ಕಲಿಕೆಯ ಉದ್ದೇಶಗಳು:

The course (22KBK17/27) will enable the students,

- 1. To Create the awareness regarding the necessity of learning local language for comfortable and healthy life.
- 2. To enable learners to Listen and understand the Kannada language properly.
- 3. To speak, read and write Kannada language as per requirement.
- 4. To train the learners for correct and polite conservation.
- 5. To know about Karnataka state and its language, literature and General information about this state.

# Course outcome (Course Skill Set)

# ಬಳಕೆ ಕನ್ನಡ ಪಠ್ಯ ಕಲಿಕೆಯಿಂದ ವಿದ್ಯಾರ್ಥಿಗಳಿಗೆ ಆಗುವ ಅನುಕೂಲಗಳು ಮತ್ತು ಫಲಿತಾಂಶಗಳು:

At the end of the course the student will be able to:

C01	To understand the necessity of learning of local language for comfortable life.
C02	To speak, read and write Kannada language as per requirement.
CO3	To communicate (converse) in Kannada language in their daily life with kannada speakers.
CO4	To Listen and understand the Kannada language properly.
C05	To speak in polite conservation.

# Module - 1

# (03 hours of pedagogy)

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

Module - 2	(03 hours of pedagogy)
<ol> <li>ನಾಮಪದಗಳ ಸಂಬಂಧಾರ್ಥಕ ರೂಪಗಳು, ಸಂದೇಹಾಸ್ಪದ ಪ್ರಶ್ನೆ</li> </ol>	ಗಳು ಮತ್ತು ಸಂಬಂಧವಾಚಕ
ನಾಮಪದಗಳು - Possessive forms of nouns, dubitive ques	tion and Relative nouns
<ol> <li>ಗುಣ, ಪರಿಮಾಣ ಮತ್ತು ವರ್ಣಬಣ್ಣ ವಿಶೇಷಣಗಳು, ಸಂಖ್ಯಾವಾಚ</li> </ol>	ಕಗಳು Qualitative, Quantitative and
Colour Adjectives, Numerals 3. ಕಾರಕ ರೂಪಗಳು ಮತ್ತು ವಿಭಕ್ತಿ ಪ್ರತ್ಯಯಗಳು –ಸಪ್ತಮಿ ವಿಭಕ್ತಿ ಪ್ರತ್ಯಯ – (ಆ. ಅದು. ಆ	ー ー ー Predictive Forms Locative Case
Module - 3	(03 hours of pedagogy
1. ಚತುರ್ಥಿ ವಿಭಕ್ತಿ ಪ್ರತ್ಯಯದ ಬಳಕೆ ಮತ್ತು ಸಂಖ್ಯಾವಾಚಕಗಳು - Dative Cases, a	nd Numerals
2. ಸಂಖ್ಯಾಗುಣವಾಚಕಗಳು ಮತ್ತು ಬಹುವಚನ ನಾಮರೂಪಗಳು -Ordinal numer	
<ol> <li>ನ್ಯೂನ/ನಿಷೇಧಾರ್ಥಕ ಕ್ರಿಯಾಪದಗಳು &amp; ವರ್ಣ ಗುಣವಾಚಕಗಳು – Defective/!</li> </ol>	Negative Verbs & Colour Adjectives
Module- 4	(03 hours of pedagogy
1.    ಅಪ್ಪಣೆ / ಒಪ್ಪಿಗೆ, ನಿರ್ದೇಶನ, ಪ್ರೋತ್ಸಾಹ ಮತು ಒತ್ತಾಯ ಆರ್ಥರೂಪ	ಪದಗಳು ಮತ್ತು ವಾಕ್ಯಗಳು
Permission, Commands, encouraging and Urging words (Imperativ	e words and sentences)
2. ಸಾಮಾನ್ಯ ಸಂಭಾಷಣೆಗಳಲ್ಲಿ ದ್ವಿತೀಯ ವಿಭಕ್ತಿ ಪ್ರತ್ಯಯಗಳು ಮತ್ತು ಸ	ಂಭವನೀಯ ಪ್ರಕಾರಗಳು
Accusative Cases and Potential Forms used in General Communicati	on
3. "ಇರು ಮತ್ತು ಇರಲ್ಲ" ಸಹಾಯಕ ಕ್ರಿಯಾಪದಗಳು, ಸಂಭಾವ್ಯಸೂಚಕ	ಮತ್ತು ನಿಷೇಧಾರ್ಥಕ ಕ್ರಿಯಾ ಪದಗಳು -
Helping Verbs "iru and iralla", Corresponding Future and Negation Ve	rbs
4. ಹೋಲಿಕೆ (ತರತಮ), ಸಂಬಂಧ ಸೂಚಕ, ವಸ್ತು ಸೂಚಕ ಪ್ರತ್ಯಯಗಳ	ು ಮತ್ತು ನಿಷೇಧಾರ್ಥಕ ಪದಗಳ ಬಳಕೆ-
Comparitive, Relationship, Identification and Negation Words	
Module - 5	(03 hours of pedagogy)
<b>1.</b> ಕಾಲ ಮತ್ತು ಸಮಯದ ಹಾಗೂ ಕ್ರಿಯಾಪದಗಳ ವಿವಿಧ ಪ್ರಕಾರಗಳು -Di	ifferent types of Tense, Time and Verbs
2. ದ್, -ತ್, - ತು, - ಇತು, - ಆಗಿ, - ಅಲ್ಲ, - ಗ್, -ಕ್, ಇದೆ, ಕ್ರಿಯಾ ಪ್ರತ್ಯಯಗಳ	ಳೊಂದಿಗೆ ಭೂತ, ಭವಿಷ್ಯತ್ ಮತ್ತು
<b>ವರ್ತಮಾನ ಕಾಲ ವಾಕ್ಯ ರಚನೆ -</b> Formation of Past, Future and Pres	ent Tense Sentences with Verb Forms
3. Kannada Vocabulary List :ಸಂಭಾಷಣೆಯಲ್ಲಿ ದಿನೋಪಯೋಗಿ ಕನ್ನಡ ಕ	ಪದಗಳು -Kannada Words in Conversation
University Preservite of Teachership	
University Prescribed Textbook :	
ಬಳಕೆ ಕನ್ನಡ	
ಬಳಕೆ ಕನ್ನಡ ಡಾ. ಎಲ್. ತಿಮ್ಮೇಶ	
ಬಳಕೆ ಕನ್ನಡ ಡಾ. ಎಲ್. ತಿಮ್ಮೇಶ ಪ್ರಕಟಣೆ : ಪ್ರಸಾರಾಂಗ,	alaten 9
ಬಳಕೆ ಕನ್ನಡ ಡಾ. ಎಲ್. ತಿಮ್ಮೇಶ ಪ್ರಕಟಣೆ : ಪ್ರಸಾರಾಂಗ, ವಿಶ್ವೇಶ್ವರಯ್ಯ ತಾಂತ್ರಿಕ ವಿಶ್ವವಿದ್ಯಾಲಯ	, ಬೆಳಗಾವಿ.
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ಬಳಕೆ ಕನ್ನಡ ಡಾ. ಎಲ್. ತಿಮ್ಮೇಶ ಪ್ರಕಟಣೆ : ಪ್ರಸಾರಾಂಗ, ವಿಶ್ವೇಶ್ವರಯ್ಯ ತಾಂತ್ರಿಕ ವಿಶ್ವವಿದ್ಯಾಲಯ ಸೂಚನೆ : ವಿಶೇಷ ಸೂಚನೆ : 1. ಮೇಲಿನ ಪಠ್ಯಕ್ರಮಕ್ಕೆ ಸೀಮಿತವಾಗಿ ಅಂತಿಮ ಪರೀಕ್ಷೆಯ ನ 2. ಮೇಲಿನ ಪಠ್ಯಕ್ರಮವನ್ನು ಹೊರತುಪಡಿಸಿದ ಬಳಕೆ ಕನ್ನಡ	ಪ್ರಶ್ನೆಪತ್ರಿಕೆ ಇರುತ್ತದೆ. ಪಠ್ಯಪುಸ್ತಕದಲ್ಲಿನ ಉಳಿದ ಭಾಗಳನ್ನು
ಬಳಕೆ ಕನ್ನಡ ಡಾ. ಎಲ್. ತಿಮ್ಮೇಶ ಪ್ರಕಟಣೆ : ಪ್ರಸಾರಾಂಗ, ವಿಶ್ವೇಶ್ವರಯ್ಯ ತಾಂತ್ರಿಕ ವಿಶ್ವವಿದ್ಯಾಲಯ ಸೂಚನೆ : ವಿಶೇಷ ಸೂಚನೆ : 1. ಮೇಲಿನ ಪಠ್ಯಕ್ರಮಕ್ಕೆ ಸೀಮಿತವಾಗಿ ಅಂತಿಮ ಪರೀಕ್ಷೆಯ ನ 2. ಮೇಲಿನ ಪಠ್ಯಕ್ರಮವನ್ನು ಹೊರತುಪಡಿಸಿದ ಬಳಕೆ ಕನ್ನಡ ಹೆಚ್ಚುವರಿ ಪೂರಕ ಓದಿಗಾಗಿ ಬಳಸಿಕೊಳ್ಳಬಹುದು. ಅಂತಿಕ	ಪ್ರಶ್ನೆಪತ್ರಿಕೆ ಇರುತ್ತದೆ. ಪಠ್ಯಪುಸ್ತಕದಲ್ಲಿನ ಉಳಿದ ಭಾಗಳನ್ನು
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ಬಳಕೆ ಕನ್ನಡ ಡಾ. ಎಲ್. ತಿಮ್ಮೇಶ ಪ್ರಕಟಣೆ : ಪ್ರಸಾರಾಂಗ, ವಿಶ್ವೇಶ್ವರಯ್ಯ ತಾಂತ್ರಿಕ ವಿಶ್ವವಿದ್ಯಾಲಯ ಸೂಚನೆ : ವಿಶೇಷ ಸೂಚನೆ : 1. ಮೇಲಿನ ಪಠ್ಯಕ್ರಮಕ್ಕೆ ಸೀಮಿತವಾಗಿ ಅಂತಿಮ ಪರೀಕ್ಷೆಯ ಹ 2. ಮೇಲಿನ ಪಠ್ಯಕ್ರಮವನ್ನು ಹೊರತುಪಡಿಸಿದ ಬಳಕೆ ಕನ್ನಡ ಹೆಚ್ಚುವರಿ ಪೂರಕ ಓದಿಗಾಗಿ ಬಳಸಿಕೊಳ್ಳಬಹುದು. ಅಂತಿನ ಪ್ರಶ್ನೆಗಳನ್ನು ಕೇಳಲಾಗುವುದಿಲ್ಲ.	ಪ್ರಶ್ನೆಪತ್ರಿಕೆ ಇರುತ್ತದೆ. ಪಠ್ಯಪುಸ್ತಕದಲ್ಲಿನ ಉಳಿದ ಭಾಗಳನ್ನು ಮ ಪರೀಕ್ಷೆಯಲ್ಲಿ ಈ ಪಾಠಗಳಿಂದ (9900832331) ಇವರನ್ನು ಸಂಪರ್ಕಿಸಿ.

Pattern of question paper1. SEE Paper shall be set for 50 questions, each carrying 1 mark. The pattern of the question paper is MCQ

		INNOVATION and DESIGN THINKIN	١G	
	ject code	21IDT18/28	Credit: 01	
	rs/Week:	1 hour. (Theory)	SEE: 50 Marks	
Total	hours: 25	CIE: 50 Marks	SEE: 2 hours	
		MODULES		Hours
PROCESS OF	DESIGN	Module-I		
	g Design thinking			
		- Theory and practice in Design thinking	- Explore presentation signers	
	MVP or Prototyping	- Theory and practice in Design uninking	- Explore presentation signers	
Teaching-		ne design thinking: Chalk and Talk method		
Learning		through presentation MVP and Prototyping		
Process	through live example			
		Module-II		
Tools for Desig	gn Thinking			
Real-Time desi	gn interaction capture	and analysis – Enabling efficient collaboratio	n in digital space – Empathy for	
	oration in distributed I			
Teaching-	Case studies on de	esign thinking for real-time interaction and a	nalysis Simulation exercises for	
Learning	collaborated enabl		-	
Process		the success of collaborated design thinking		
		Module-III		
Design Thin				
Design Thinkin	ng to Business Proces	s modeling - Agile in Virtual collaboration	environment – Scenario based	
Prototyping				
Teaching-		sign thinking and business acceptance of the	design Simulation on the role of	
Learning	virtual eco-system	for collaborated prototyping		
Process				
		Module -IV		
DT For strateg				
		– Strategic Foresight - Change – Sense Ma		
		ition – experience design - Standardization –	Humanization - Creative Culture	
Teaching-		ganization – Business Model design. mples of successful designs		
Learning		tudents on the success of design Live project	on design thinking in a group of	
Process	4 students	tudents on the success of design Live project	on design uninking in a group of	
1100035	4 students	Module-V		
Design thinking	workshop	iviouuic- v		
		ze, Design, Ideate, Prototype and Test		
Teaching-		nking workshop from the expect and then pre-	esentation by the students on the	
Learning	learning from the			
Process Text book:		•		
	n R Koronitz Stanhan	O'Brien and John P. Hutchinson, "Engineerin	a Design" Congogalogming	
	ernational edition) Sec		g Design , Cengagerearning	
	,	n of Business: Why Design Thinking is the Ne	ext Competitive Advantage" Harvar	d
	siness Press, 2009.	n of Business. Why Design Thinking is the Ne	ext Competitive Advantage , Harvar	u
		Meinel and Larry Leifer (eds), "Design Thinki	ing: Understand Improve	
	pply", Springer, 2011	Memer and Larry Leffer (eds), Design Thinks	ing. Understand – improve	
		nking for Strategic Innovation: What They Ca	n't Teach You at Rusinessor Design	
	ool", John Wiley & Sc		int reach i ou at Dusinessoi Desigli	L
Reference bo				
		I.Shahin, "Engineering Design Process", Ceng	pageLearning Second Edition 2011	1
		with Design Thinking - Ten Stories of What V		
		0 Sep 2013 by Jeanne Liedtka (Author), Andr		
		At the end of the course the student will be		
	ppreciate various desig			
	**	lesign ideas through differenttechnique		
	*	e of reverse Engineering to Understand produ	ucts	
	raw technical drawing			
		0		

		P	P.D.A College of Engine	ering Kalaburagi (Au	uton	omou	s In	stitutio	on)				
				ching and Examina									
I Son		Based Education Engineering St	(OBE)and Choice Based	Credit System (CB)	CS)						year 2	2022-23	)
1 501		Engineering 5		B		achin ours/V	g		ry Group ) Examination				
S L N o	Course and Code	l Course	Course Title	TD/PSB	The	Tutor ial	Practic	SD A	Duration in	C H C	SEE	T of	
U						Т	Р	S					
1	ASC(IC)	22MATC11	Mathematics for Civil Engg Stream-I	Maths	2	2	2	0	03	50	5 0	100	04
2	ASC(IC)	22CHEC12	Chemistry for Civil Engg Stream	Chemistry	2	2	2	0	03	50	5 0	100	04
3	ESC	22CED13	Computer-Aided Engineering Drawing	Civil/Mech Engg dept	2	0	2	0	03	50	5 0	100	03
4	ESC-I	22ESC145	Introduction to C Programming	Respective EnggDept	3	0	0	0	03	50	5 0	100	03
5	ETC-I	22ETC15X	Emerging Technology Courses		3	0	0	0	03				
6	AEC	22ENG16	Communicative English	Humanities	1	0	0	0	1.5	50	5 0	100	01
7	HSMS	22ICO17/27	Indian Constitution	Humanities	1	0	0	0	01	5 0	5 0	100	01
8	HSMS	22SFH18	Scientific Foundations of Health	AnyDept	1	0	0	0	01	50	5 0	100	01
	·			TOTAL						400	40 0	800	20

	Outcome-B	ased Educati	P.D.A College of Engineerin Scheme of Teach on(OBE)and Choice Based C	ing and Examination	ons-2	2022	2		,	ademi	ic year	: 2022-	23)
II Ser	nester (Civi	il Engineeri	ng Stream)	• • • •							· (Ph	ysics (	Group)1
	g					achi urs/	ng Wee	k	Exan	ninatio	on	-	2
SI N o	Course and CourseCod	-	CourseTitle	TD/PSB	Theory	Tutorial	Practical/	SDA	Duration in hours	CIE Marks	SEE Marks	Total Marks	
				F	L	Т	Р	S	I				
1	ASC(IC)		Mathematics for Civil Engg stream-II	Maths	2	2	2	0	03	50	50	100	04
2	ASC(IC)		Physics for Civil Engg Stream	РНҮ	2	2	2	0	03	50	50	100	04
3	ESC	22CIV23	Engineering Mechanics	CivilEngineering Dept	2	2	0	0	03	50	50	100	03
4	ESC-I		Introduction To Electrical Engineering	Respective Engg dept	3	0	0	0	03	50	50	100	03
5.	PLC-I		Programming Language Courses-I&II		2	0	2	0	03	50	50	100	03
6	AEC		Professional Writing Skills in English	Humanities	1	0	0	0	1.5	50	50	100	01
7	HSMC		Samskrutika Kannada/ Balake Kannada	Humanities	1	0	0	0	1.5	50	50	100	01
8	AEC/SDC		Innovation and Design Thinking	Any Dept	1	0	0	0	01	50	50	100	01
				total						400	400	800	20

	Course Title: Mat	hematics-I for Civil Eng	gineering stream	
		Based Credit System (C		
	(Fron	n the academic year 2022		50
Course Code		22MATC11	CIE Marks	50
Credits		04	SEE Marks	50
Course Type		Integrated		100
Contact Hours/V		2-2-2	Total Marks	
Contact Hours of	f Pedagogy	42 hours Theory	Exam Hours	03
		+10 Lab slots		
	Module-1 (	Calculus	(5L+3T)	
Polar coordinates, Polar curv Pedal equations. Curvature an Problems. <b>Self-study:</b> Center <b>Applications:</b> Applied Mech <b>L2 and L3</b> )	nd Radius of curva and circle of curva	ature - Cartesian, Parame ature, evolutes and involutes	tric, Polar and Pedal for utes.	ms. Simple
,	e-2 Series Expans	sion and Multivariable	Calculus	(6L+3T)
Introduction to series expan				· ·
applications.				
Taylor's and Maclaurin's ser	-		nly) – problems.	
Indeterminate forms – L'Hos Partial differentiation, total de			ctions Jacobian and	
problems. Maxima and minin				
Self-study: Euler's theorem a				h single constraint
Applications: Computation of				
extreme values(RBT Levels:		**	-	-
		uations (ODEs) of first o		·
Introduction to first-order	ordinary differen	itial equations pertainin	g to the applications fo	r
l'ivil anginaaring			o 11	
	ential equations. E	Exact and reducible to ex		s -Integrating factor
<b>Civil engineering.</b> Linear and Bernoulli's differ $1 \left( \partial M  \partial N \right) = 1$		Exact and reducible to ex		s -Integrating factor
Linear and Bernoulli's differ		Exact and reducible to ex		s -Integrating facto
Linear and Bernoulli's differ on $\frac{1}{N} \left( \frac{\partial M}{\partial y} - \frac{\partial N}{\partial x} \right)$ and $\frac{1}{M}$	$\frac{1}{\left(\frac{\partial N}{\partial x} - \frac{\partial M}{\partial y}\right)}$			s -Integrating facto
Linear and Bernoulli's differ on $\frac{1}{N} \left( \frac{\partial M}{\partial y} - \frac{\partial N}{\partial x} \right)$ and $\frac{1}{M}$ Orthogonal trajectories and N	$\frac{1}{\left(\frac{\partial N}{\partial x} - \frac{\partial M}{\partial y}\right)}$ Newton's law of co	poling.	act differential equations	
Linear and Bernoulli's differ on $\frac{1}{N} \left( \frac{\partial M}{\partial y} - \frac{\partial N}{\partial x} \right)$ and $\frac{1}{M}$ Orthogonal trajectories and N Nonlinear differential equation	$\frac{1}{\left(\frac{\partial N}{\partial x} - \frac{\partial M}{\partial y}\right)}$ Jewton's law of co <b>tions:</b> Introduction	ooling. n to general and singular	act differential equations	
Linear and Bernoulli's differ on $\frac{1}{N} \left( \frac{\partial M}{\partial y} - \frac{\partial N}{\partial x} \right)$ and $\frac{1}{M}$ Orthogonal trajectories and N Nonlinear differential equate equations, reducible to Claira	$\frac{1}{1} \left( \frac{\partial N}{\partial x} - \frac{\partial M}{\partial y} \right)$ Sewton's law of continut's law of continut's equations - Private Pr	ooling. n to general and singular roblems.	act differential equations	o only, Clairaut's
Linear and Bernoulli's differ on $\frac{1}{N} \left( \frac{\partial M}{\partial y} - \frac{\partial N}{\partial x} \right)$ and $\frac{1}{M}$ Orthogonal trajectories and N Nonlinear differential equations, reducible to Claira Self-Study: Applications of O	$\left[\frac{\partial N}{\partial x} - \frac{\partial M}{\partial y}\right]$ Newton's law of continut's equations - Production odd of the continut's equations - Production - Productions	ooling. n to general and singular roblems <b>.</b> gineering problems like l	act differential equations	o only, Clairaut's
Linear and Bernoulli's differ on $\frac{1}{N} \left( \frac{\partial M}{\partial y} - \frac{\partial N}{\partial x} \right)$ and $\frac{1}{M}$ Orthogonal trajectories and N Nonlinear differential equations, reducible to Claira Self-Study: Applications of C solution of non-linear ODE b	$\left[\frac{\partial N}{\partial x} - \frac{\partial M}{\partial y}\right]$ Newton's law of continut's equations - Production odd to be a set of the set	ooling. n to general and singular roblems. gineering problems like l olvable for x and y.	act differential equations solutions, Solvable for p pending of the beam, wh	o only, Clairaut's
Linear and Bernoulli's differ on $\frac{1}{N} \left( \frac{\partial M}{\partial y} - \frac{\partial N}{\partial x} \right)$ and $\frac{1}{M}$ Orthogonal trajectories and N Nonlinear differential equations, reducible to Claira Self-Study: Applications of C solution of non-linear ODE b Applications: Rate of Growt	$\left[\frac{\partial N}{\partial x} - \frac{\partial M}{\partial y}\right]$ Newton's law of continut's equations - Production odd to be a set of the set	boling. n to general and singular roblems <b>.</b> gineering problems like b olvable for x and y. uction of heat.( <b>RBT Lev</b>	act differential equations solutions, Solvable for p pending of the beam, wh	o only, Clairaut's hirling of shaft,
Linear and Bernoulli's differ on $\frac{1}{N} \left( \frac{\partial M}{\partial y} - \frac{\partial N}{\partial x} \right)$ and $\frac{1}{M}$ Orthogonal trajectories and N Nonlinear differential equations, reducible to Claira Self-Study: Applications of C solution of non-linear ODE b Applications: Rate of Growt	$\frac{\partial N}{\partial x} - \frac{\partial M}{\partial y}$ Sewton's law of continue is equations - Production in the equations - Production is in Civil Entry the method of so the or Decay, Conduct Module-4 Integration is the equation of the equation is the equation of the equation is	boling. n to general and singular roblems. gineering problems like l olvable for x and y. uction of heat.( <b>RBT Lev</b> al <b>Calculus</b>	act differential equations solutions, Solvable for p pending of the beam, wh els: L1, L2 and L3)	o only, Clairaut's hirling of shaft,
Linear and Bernoulli's differ on $\frac{1}{N} \left( \frac{\partial M}{\partial y} - \frac{\partial N}{\partial x} \right)$ and $\frac{1}{M}$ Orthogonal trajectories and N Nonlinear differential equations, reducible to Claira Self-Study: Applications of C solution of non-linear ODE b Applications: Rate of Growt Introduction to Integral Ca Multiple Integrals: Evaluati	$\frac{\partial N}{\partial x} - \frac{\partial M}{\partial y}$ Sewton's law of continue to a sevent seven seven seven seven seven to a seven s	boling. n to general and singular roblems. gineering problems like l olvable for x and y. uction of heat.( <b>RBT Lev</b> <b>al Calculus</b> <b>ngineering applications.</b> triple integrals, evaluation	act differential equations solutions, Solvable for p bending of the beam, wh els: L1, L2 and L3) (6L+3T) n of double integrals by	o only, Clairaut's hirling of shaft,
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	Laboratory experiments (2 hours/week per batch/ batch strength 15)					
<u>10 lab</u>	sessions + 1 repetition class + 1 Lab Assessment					
1	2D plots for Cartesian and polar curves					
2	Finding angle between polar curves, curvature and radius of curvature of a given curve					
3	Finding partial derivatives, Jacobian and plotting the graph					
4	Applications to Maxima and Minima of two variables					
5	Solution of first-order differential equation and plotting the graphs					
6	Program to compute surface area, volume and centre of gravity					
7	Evaluation of improper integrals					
8	Numerical solution of system of linear equations, test for consistency and graphical					
	representation					
9	Solution of system of linear equations using Gauss-Seidel iteration					
10						
	Rayleigh power method					
.Sugge	sted software's: Mathematica/MatLab/Python/Scilab					
Cours	e outcome (Course Skill Set)					
At the	end of the course the student will be able to:					
CO 1	Apply the knowledge of calculus to solve problems related to polar curves					
CO 2	Learn the notion of partial differentiation to compute rate of change of multivariate					
	functions					
CO 3	Analyze the solution of linear and nonlinear ordinary differential equations					
CO 4	Apply the knowledge of multiple integrals to compute area and volume.					
CO 5	Make use of matrix theory for solving for system of linear equations and compute					
	eigen values and eigen vectors. Familiarize with modern mathematical tools namely					
	MATHEMATICA/ MATLAB/ PYTHON/SCILAB					

Course Title:	Chemistry for Civil Engineeringstream					
Course Code:	22CHEC12/22	CIE Marks	50			
Course Type		SEE Marks	50			
(Theory/Practical/Integrated)	Integrated	Total Marks	100			
Teaching Hours/Week (L:T:P: S) <sup>1</sup>	2:2:2:0	ExamHours	03+02			
Total Hours of Pedagogy	40 hours Theory +10 to 12 Lab slots	Credits	04			
Module-1: St	tructural Materials (8 hr)	•				

Metals and Alloys: Introduction, Properties and application of Iron and its alloys, Aluminium and its alloys.

**Cement:** Introduction, composition, properties, classification, manufacturing process of cement, process of setting and hardening of cement, additives for cement and testing of cement.

**Refractories:** Introduction, classification based on chemical composition, properties and application of refractory materials. **Glass:** Introduction, Composition, Types, Preparation of Soda-lime glass, properties and applications of glass.

**Self-learning:** Chemistry of reinforced concrete from various sources of water (seawater, groundwater, treated water).

#### Module-2: Energy Conversion and Storage, Corrosion (8 hr)

**Energy conversion:** Introduction, construction, working, and applications of Na-ion cell, methanol-oxygen fuel cell. **Storage devices:** Introduction, construction and working of Li-ion battery.

**Corrosion:** Introduction, mechanism of electrochemical corrosion with iron as an example, types (differential metal and aeration), Stress corrosion, corrosion control galvanization, anodization and sacrificial anode method. Factors affecting corrosion (EMF, Temperature, pH, relative area of anode and cathode and polarization).

Self-learning: Corrosion inhibitors.

#### Module-3: Water Technology and Nanotechnology (8 hr)

**Water technology:** Introduction, sources and nature of impurities of water, hardness of water, determination of temporary, permanent and total hardness by EDTA method, numerical problems, softening of water by Lime-Soda Process, determination of COD, numerical problems. Purification of water by Reverse osmosis and chlorination methods.**Nanotechnology:** Introduction, properties and engineering application of carbon nanotubes, graphene and nanomaterials for water treatment(metal oxide)

Self-learning: Introduction, classification, properties and application of silicon carbide.

#### Module-4:Polymer and Composites (8 hr)

**Polymers**: Introduction, types of polymerization, free radical mechanism of addition polymerization, techniques of addition polymerization, molecular weight; number average and weight average, numerical problems. Synthesis, properties and industrial applications of polyvinylchloride (PVC) and polystyrene.

**Conducting polymers** – synthesis and conducting mechanism of Polyacetylene

Fibers: Introduction, synthesis, properties and industrial applications of Kevlar and Polyester.

**Plastics:** Introduction, synthesis, properties and industrial applications of poly(methyl methacrylate) (PMMA) and Teflon.**Adhesives:** Introduction, synthesis, properties and application of epoxy resin.

Polymer Composite: Introduction, properties and applications of fibre reinforced polymer composites.

**Self-learning: Biopolymer**: Introduction, structural properties, and applications of cellulose and lignin, synthesis of polylactic acid and their application.

### Module-5:Phase Rule and Analytical Techniques (8 hr)

**Phase rule:** Introduction, Definition of terms: phase, components, degree of freedom, phase rule equation. Phase diagram: Two component-lead-silver system.

**Analytical techniques**: Introduction, principle, instrumentation of potentiometric sensors; its application in the estimation of iron, Optical sensors (colorimetry); its application in the estimation of the copper, pH-sensor (Glass electrode); its application in the determination of pH of beverages.

**Self-learning:** Determination of viscosity of biofuel and its correlation with temperature.

# PRACTICAL MODULE

### A – Demonstration (any two) offline/virtual:

A1. Synthesis of polyurethane

A2. Quantitative estimation of Aluminium by precipitation methodA3. Synthesis of

iron oxide nanoparticles

A4. Determination of chloride content in the given water sample by Argentometric method

<u>B-Exercise (compulsorily any 4 to be conducted):</u>

B1.Conductometric estimation of acid mixture

B2. Potentiometric estimation of FAS using K2Cr2O7

B3. Determination of pKa of vinegar using pH sensor (Glass electrode)

B4. Determination of rate of corrosion of mild steel by weight loss methodB5.Estimation of total hardness of water by EDTA method

C – Structured Enquiry (compulsorily any 4 to be conducted):

C1. Estimation of Copper present in electroplating effluent by optical sensor (colorimetry)C2. Determination of Viscosity coefficient of lubricant (Ostwald's viscometer)

C3. Estimation of iron in TMT bar by diphenyl amine/external indicator method C4. Estimation of Sodium present in soil/effluent sample using flame photometry

C5. Determination of Chemical Oxygen Demand(COD) of industrial waste water sample

D – Open Ended Experiments (any two):

D1. Gravimetric estimation of gypsum in Portland cementD2.

Electroplating of desired metal on substrate

D3. Estimation of manganese dioxide in pyrolusite

D4. Analysis of cement for its components

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th definite shape and dimension te of objects through different v ect oftware.	iews	
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Course Title:	Introduction to C Pro	ogramming	
Course Code:	22ESC145/245	CIE Marks	50
Course Type (Theory/Practical	Integrated	SEE Marks	50
/Integrated )		Total Marks	100
Teaching Hours/Week (L:T:P: S)	2:0:2	Exam Hours	03
Total Hours of Pedagogy	40 hours	Credits	03
	IODULES		TeachingHours
	Module-I		8
Algorithms, Flowcharts, Introduction to C:	Algorithms, Flowcharts, Basi	c Structure of C Program,	
Executing a "C" program, Constants, Variables and		C I	8 hours
<b>Operators and Expressions, Managing Input/</b>	Output: Arithmetic operators,	relational operators, logical	
operators, assignment operators, increment/ decre	ement operators, conditional o	perators, bit wise operators,	
special operators. Evaluation of expression, pr			
expression, operator precedence and associativity.	. Formatted Input and Output.	Examples & exercises.	
Module-II			
Decision making and branching: Decision Ma			
nested if statements, the else if ladder, Switc	ch statement, The ? : opera	tor, Unconditional control	8 hours
Statements.			
Decision Making and Looping: While statem	ent, Do-While statement, Fo	r statement, jumps in loop.	
Examples & exercises.			
Module-III			
Arrays: One dimensional Array, declaration,	, Initialization, Two dimens	sional Arrays declaration,	
Initialization, examples and exercises.			8 hours
Strings: Declaring and Initializing String Varia			
Screen, Arithmetic Operations on Characters, Stri	ng-handling functions, examp	les and exercises.	
Module -IV			
Functions and Recursion : Need for User-def			0.1
User-defined Functions, Definition of functions,		s, Function calls, Function	8 hours
declaration, Category of functions, Recursion, ex		hlas Assassing Structure	
<b>Structures and Unions:</b> Defining a Structures, I Members, Structure Initialization, Copying and c			
members, structure initialization, Copying and C members, array of structures <b>Unions</b> : Union, Size			
	Iodule-V	ipies & exercises.	
<b>Pointers:</b> Introduction, Understanding pointers,		ariable Declaring pointer	
variables, Initializing of pointer variables, access			8 hours
Examples & exercises.	ing a variable unough its poin	iter, pointer expressions,	0 110013
File Management: Defining and opening a fil	le closing file input output	operations on files error	
handling during I/O operations. Examples & exer-		operations on mes, enor	
Text book:			
2. E. Balagurusamy, "Programming in ANSI	C" Tata Megraw Hill Educatio	on Private Limited– VEdition	2016
Reference books:			_010
5. Herbert Schildt, "Complete Reference in C",	Fourth Edition Tata McGraw	Hill Publication 2017	
<ul><li>6. Yashwant P. Kanetakar, "Let us C", Fifth Ed</li></ul>			
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7. Brian W Kernighan & Dennis M Ritchie	" The C Programm	ing Language", Prentice Hall	Publisher,
Second Edition, 2004.			
8. Behrouz A.Forouzan and Richard F.Gilberg,	Computer Program: A structu	ired programmingApproach (	Jsing C.",
Third edition, Thomson Learning, 2005.			
Course outcome (Course Skill Set)	to		
At the end of the course the student will be able		to tunogood Operators in Cla	201000
CO1 Develop Algorithm and flowcharts a			nguage
CO2 Identify and use proper decision /co			
CO3 Apply arrays and Strings fu			
CO4 Demonstrate the use of structures and			
<b>CO5</b> Develop C program for real world p			
L	ist of Programs – 22ESC145	/245	

<ul> <li>1.Write a C program using printf statement: <ul> <li>a) Print your name and Address.</li> <li>b) Print the pattern: <ul> <li>+</li> <li>+</li> <li>+</li> <li>+</li> </ul> </li> <li>2.Write a C Program using Scanf statements <ul> <li>a) Read int, char and float values from the keyboard and display the same.</li> </ul> </li> <li>3.Write a c Program to find : <ul> <li>i) Area of rectangle</li> <li>ii) Area of Square</li> <li>iii) Area of circle</li> </ul> </li> <li>4. Write a c program using if, ifelse, nested if and elseif ladder. <ul> <li>i) To find whether number is +ve or -ve.</li> <li>iii) To find largest of two numbers.</li> <li>iv) To find largest of three numbers.</li> </ul> </li> <li>5. Write a c program using while, do-while and for looping statement.</li> </ul></li></ul>
<ul> <li>b) Print the pattern:</li> <li>+</li> <li>+</li> <li>+</li> <li>+</li> <li>+</li> <li>+</li> <li>+</li> <li>+</li> <li>+</li> <li>2.Write a C Program using Scanf statements <ul> <li>a) Read int, char and float values from the keyboard and display the same.</li> </ul> </li> <li>3.Write a c program to find : <ul> <li>i) Area of rectangle</li> <li>ii) Area of square</li> <li>iii) Area of square</li> <li>iii) Area of circle</li> </ul> </li> <li>4. Write a c program using if, ifelse, nested if and elseif ladder. <ul> <li>i) To find whether number is odd or even.</li> <li>ii) To find whether number is +ve or -ve.</li> <li>iii) To find largest of two numbers.</li> <li>iv) To find largest of three numbers.</li> </ul> </li> <li>5. Write a c program using while, do-while and for looping statement.</li> </ul>
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<ul><li>iv) To find largest of three numbers.</li><li>5. Write a c program using while , do-while and for looping statement.</li></ul>
5. Write a c program using while , do-while and for looping statement.
i) Print 1 to 10 numbers using all the three looping statements.
6. Write a c program using arrays:
i) Read 1 to 10 array elements and display the same.
ii) Read float elements and display the same.
iii) Read character and display the same.
7. Write c program using strings:
i. Read a string from keyboard and display the same.
Programming Assignments:
11. C Program to find Mechanical Energy of a particle using $E = mgh+1/2 mv^2$ .
12. C Program to convert Kilometers into Meters and Centimeters.
13. C Program To Check the Given Character is Lowercase or Uppercase or Special Character.
14. Program to balance the given Chemical Equation values x, y, p, q of a simple chemical equation of the type: The task
to find the values of constants b1, b2, b3 such that the equation is balanced on both sides and it must be the reduced
form.
15. Implement Matrix multiplication and validate the rules of multiplication.
16. Compute $sin(x)/cos(x)$ using Taylor series approximation. Compare you result with the built-in library function. Private the series approximation of the series approximation of the series approximation of the series approximation of the series approximation.
both the results with appropriate inferences.
17. Sort the given set of N numbers using Bubblesort.
18. Write functions to implement string operations such as compare, concatenate, string length. Convince the parameter
passing techniques.
19. Implement structures to read, write and compute average-marks and the students scoring above and below the average-marks and the students scoring above and below the average-marks and the students scoring above and below the average-marks and the students scoring above and below the average-marks and the students scoring above and below the average-marks and the students scoring above and below the average-marks and the students scoring above and below the average-marks are students above and below the average-marks are students are students.
marks for a class of N students.
. Develop a program using pointers to compute the sum, mean and standard deviation of all elements stored in an array real numbers

		Communicative Engli	sh	
(	Subject code	22ENG16	Credit: 01	
	Hours/Week:	1 hour. (Theory)	SEE: 50 Marks	
Т	otal hours: 15	CIE: 50 Marks	SEE: 1 .5hours	
		MODULES		Hours
		Module-I		
English, Pro	ocess ofCommunication,	<b>English :</b> Communicative English, Fund Barriers to Effective Communicative Engl sonal and Intrapersonal Communication S	ish, Different styles and levels	3 hrs
consonants	and vowels, Sounds Mi nt, Stress Shift and Inton	<b>Module-II</b> etic Transcription, English Pronunciation spronounced, Silent and Non silent Let nation, Spelling Rules and Words often N	ters, Syllables and Structure.	3 hrs
		Module-III		3 hrs
and Parts of Spe	eech, Articles and Prepos	ammar and Vocabulary PART - I :Gram ition. Question Tags, One Word Substitut Types of Vocabulary – Exercises on it.	-	
				3 hrs
Suffixes,		ammar and Vocabulary PART - II:Wo		
	s and Abbreviations. Wo	rd Pairs (Minimal Pairs) – Exercises, Te enses) and Exercises on it.	ense and Types of tenses, The	
Sequence of Communic	Tenses (Rules in use of Te	enses) and Exercises on it. <b>Module-V</b> loyment :Information Transfer:Oral Pr	resentation and its Practice.	3 hrs
Sequence of Communic Difference (MTI), Varia Neutralizatio Self-learnin (carborandu Text bo 3) Ca 4) A	Tenses (Rules in use of Termination Skills for Employment between Extempore/Pulous Techniques for on of Mother Tongue Influ- ng: Abrasives: Introduc m). Dok: ommunication Skills by Textbook of English I	enses) and Exercises on it. <b>Module-V</b> loyment :Information Transfer:Oral Problem blic Speaking, Communication Guideling tence. Reading and Listening Comprehension ction, classification, properties and app Y Sanjay Kumar & Pushp Lata, Oxford Univer- Language Communication Skills, (ISB)	resentation and its Practice. es. Mother Tongue Influence ons – Exercises. oplication of silicon carbide versity Press India Pvt Ltd - 201	9.
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		Indian Constitution		
Subject c	ode	22ICO17/27	Credit: 0	1
Hours/We		1 hour. (Theory)	SEE: 50 Marks	
Total hour	s: 15	CIE: 50 Marks	SEE: 1 hours	
	<b>.</b>	MODULES		TeachingHours
		Module-I		<u> </u>
Indian Constitution:	Necessity of the	Constitution, Societies before and after th	he Constitution adoption.	
Introduction to theIn	dian constitution, N	Making of the Constitution, Role of the Constitution	stituent Assembly.	3 hours
		Module-II		
		on. Preamble of Indian Constitution &		
	ntal Rights (FR's)	and its Restriction and limitations in diffe	erent Complex Situations.	3 hours
building.				
		Module-III		
		olicy (DPSP's) and its present relevan		
		nd significance in Nation, Union Executiv	e: Parliamentary System,	3 hours
Union Executive -	- President, PrimeN	Ainister, Union Cabinet.		
		Module -IV	Transford to the training	
		ary Committees, Important Parliamentary a and other Courts, Judicial Reviews and Ju		3 hours
System of mula, Su	Stellie Court of Indi	Module-V	iuiciai Activisiii.	5 hours
State Executive on	d Governor CM		P Election Commission	
	tate Executive and Governor, CM, State Cabinet, Legislature - VS & VP, Election Commission, lections & Electoral Process. Amendment to Constitution, and Important Constitutional Amendments till			3 hours
today. Emergency Pr	-			
Text book:	ovisions.			
	ı of India" (for	Competitive Exams) - Published by	Naidhruva Edutech Lear	rning Solutions.
Bengaluru. – 2		i i i i i i i i i i i i i i i i i i i		8
U		ion of India", (Students Edition.) by Du	irga Das Basu ( <b>DD Basu</b>	): Prentice –Hall,
2008.				
<b>Reference books:</b>				
1. "Constitu	tion of India, Prof	fessional Ethics and Human Rights" by S	Shubham Singles, Charles E	. Haries, andet
al: publish	ed by Cengage Lea	arning India, Latest Edition – 2019.		
2. "The Cor	stitution of India	" by Merunandan K B: published by Meru	gu Publication, Second Ed	ition,
Bengaluru	ı <b>.</b>			
3. "Samvidh	ana Odu" - for St	udents & Youths by Justice HN Nagamoh	han Dhas, Sahayana, kere	ekon.
4. M.Govind	arajan, S.Natarajan	, V.S.Senthilkumar, "Engineering Ethics",	, Prentice –Hall, 2004.	
Course outcome (	Course Skill Set)			
	ourse the student w			
	se the basic structure	e of Indian Constitution.		
		ental Rights, DPSP's and Fundamental Dutie		1.
CO3 know a		vernment, political structure & codes, proce	edures.	
		nts and Emergency Provisions, other import		

	Scientific Foundations of Health		
Subject code	22SFH18/28	Credit: 0	1
Hours/Week:	1 hour. (Theory)	SEE: 50 Marks	5
Total hours: 15	CIE: 50 Marks	SEE: 1 hours	
	MODULES		TeachingHours
of Health, Health beliefs, Advantage	<b>Module-I</b> ositive mindset: Health -Importance of H s of good health, Health & Behavior, He ological disorders-Methods to improve gen.	alth & Society, Health &	3 hours
Nutritional guidelines for good hea	<b>Module-II</b> tter future: Developing healthy diet for go lth, Obesity & overweight disorders and th, Wellness and physical function, How to	its management, Eating	3 hours
disorders, ratiess components fornear	Module-III	avoid excretise injuries.	
Education, the value of relationship	ationships : Building communication skills and communication skills, Relationships for of life (more than a biology), Changing h	or Better or worsening of	3 hours
avoiding of addictions, How addiction	<b>Module -IV</b> Characteristics of health compromising be on develops, Types of addictions, influence and non addictive people & their behaviors.	ing factors of addictions,	3 hours
<u></u>	Module-V		
infections, How to reduce risks for	eases for good health: How to protect good health, Reducing risks & coping uality of life, Health & Wellness of youth status.	with chronic conditions,	3 hours
Text book:			
University Website.	f Health" – Study Material Prepared by l		
	<b>Health",</b> (ISBN-978-81-955465-6-5) publi	shed by Infinite Learning Se	olutions,
Bangalore – 2022.			
	<b>ktbook,</b> FOURTH EDITION by Jane Ogde	n McGraw Hill Education (	India) Private
Limited - Open University F	ress.		
Published by Routledge 71	d edition) by Charles Abraham, Mark Co I Third Avenue, New York, NY 10017. Y (Ninth Edition) by SHELLEY E. TAY		-
Angeles, McGraw Hill Educ 7. SWAYAM / NPTL/ MOO	ation (India) Private Limited - Open Univer CS/ We blinks/ Internet sources/ YouTub	sity Press. e videos and other materials	/ notes.
	Health (Health & Welness) - General Bo	oks published for universit	ty andcolleges
	rs and published by the reputed publisher.		
Course outcome (Course Skill Set)			
At the end of the course the student			
	se about Health and wellness (and its Belief	s) & It's balance for positive	e mindset.
	tyles for good health for their better future.		
	ng relationships to meet the requirements of		
future.	g risks and harmful habits in their campus	-	r their bright
<b>CO5</b> Prevent and fight against	harmful diseases for good health through pe	ositive mindset.	

	e Title: <b>Mathematics-II for Civil Er</b> As per Choice Based Credit System (C (From the academic year 202	CBCS) scheme]	
Course Code	22MATC21	CIE Marks	50
Credits	04	SEE Marks	50
Course Type	Integrated	SEE Marks	50
Contact Hours/Week (L-T-P)	2-2-2	Total Marks	100
Contact Hours of Pedagogy	42 hours Theory+10 Lab slots	Exam Hours	03
Connect Hours of Feaugogy	12 Hours Theory To Eus slots	Extili Hours	05
Introduction to Vector Calculus Vector Differentiation: Scalar and divergence - physical interpretation Vector Integration: Line integration flux. Statement of Green's theorem Self-Study: Volume integral and Applications: Heat and mass transvelocity and acceleration of a mov Module-2 Ordinary Importance of higher-order ord Higher-order linear ODEs with convariation of parameters, Cauchy's		<ul> <li>ields. Problems.</li> <li>work done by a force and</li> <li>ental engineering. Analysis of the data of th</li></ul>	
	ring, Transmission lines, Highway en		, L2 and L3)
	al Differential Equations (PDEs)	(5L+3T)	
Formation of PDE's by eliminatio integration. Homogeneous PDEs Lagrange's linear PDE. Derivation <b>Self-Study:</b> Solution of one-dime separation of variables. <b>Applications:</b> Design of structure	al equations for Civil Engineering a n of arbitrary constants and functions. nvolving derivatives with respect to o n of one-dimensional heat equation an nsional heat equation and wave equat s (vibration of rod/membrane)( <b>RBT</b> )	. Solution of nonhomogeneo one independent variable onl id wave equation. ion by the method of <b>Levels: L1, L2 and L3</b> )	
	lule-4 Numerical Methods -1	(6L+3T) Sivil Engineering	
Solution of algebraic and transcer Problems. Finite differences, Interpolation u	ds for discrete data in the field of C dental equations: Regula-Falsi and N sing Newton's forward and backward ula and Lagrange's interpolation form	ewton-Raphson methods (or difference formulae,	roof). Problem

	Module-5 Numerical Methods -2 (5L+3T)
Introd	luction to various numerical techniques for handling Civil Engineering applications.
	rical Solution of Ordinary Differential Equations (ODE's): Numerical solution of ordinary differential
	ons of first order and first degree – Taylor's series method, Modified Euler's method, Runge-Kutta method of
	order and Milne's predictor-corrector formula (No derivations of formulae). Problems.
	tudy: Adam-Bashforth method.
	cations: Finding approximate solutions to ODE related to civil engineering fields( <b>RBT Levels: L1, L2 and</b>
L3)	
	f Laboratory experiments (2 hours/week per batch/ batch strength 15)
	sessions + 1 repetition class + 1 Lab Assessment
1	Finding gradient, divergent, curl and their geometrical interpretation
2	Verification of Green's theorem
3	Solutions of Second-order ordinary differential equations with initial/boundary conditions
4	Solution of a differential equation of oscillations of a spring/deflection of a beam with different loads
5	Solution of one-dimensional heat equation and wave equation
6	Solution of algebraic and transcendental equations by Regula-Falsi and Newton-Raphson method
7	Interpolation/Extrapolation using Newton's forward and backward difference formula
8	Computation of area under the curve using Trapezoidal, Simpson's (1/3) <sup>rd</sup> and (3/8) <sup>th</sup> rule
9	Solution of ODE of first order and first degree by Taylor's series and Modified Euler's method
10	Solution of ODE of first order and first degree by Runge-Kutta 4th order and Milne's
	predictor-corrector method
Sugg	ested software's: Mathematica/MatLab/Python/Scilab
CO 1 CO 2	surface integral.         2       Analyze the solution of higher order ordinary differential equations
CO 3	B Demonstrate partial differential equations and their solutions for physical interpretations.
CO 4	Apply the knowledge of numerical methods in solving physical and engineering phenomena.
CO 5	5 Get familiarize with modern mathematical tools namely
	Mathematica/MatLab/Python/Scilab
Books Fext I 1. I 2. I	<ul> <li>sted Learning Resources:</li> <li>a (Title of the Book/Name of the author/Name of the publisher/Edition and Year)</li> <li>Books</li> <li>B. S. Grewal: "Higher Engineering Mathematics", Khanna publishers, 44th Ed., 2021.</li> <li>E. Kreyszig: "Advanced Engineering Mathematics", John Wiley &amp; Sons, 10th Ed., 2018.</li> <li>ence Books</li> </ul>
	V. Ramana: "Higher Engineering Mathematics" McGraw-Hill Education, 11th Ed.,2017Srimanta Pal & Subodh C. Bhunia: "Engineering Mathematics" Oxford UniversityPress,3rd Ed.,
2016.	<b>Finance Fut Constant C. Difference</b> ing inducentation of the University <b>Fitess</b> , sid Ed.,
3. I	<b>N.P Bali and Manish Goyal</b> : "A textbook of Engineering Mathematics" Laxmi Publications, 10th Ed., 2022.
4.	C. Ray Wylie, Louis C. Barrett: "Advanced Engineering Mathematics" McGraw – Hill Book Co.,
	ork, 6th Ed., 2017. Gupta C.B, Sing S.R and Mukesh Kumar: "Engineering Mathematic for Semester I and II", Mc-Graw
Hill E	ducation(India) Pvt. Ltd 2015.
6. I	H. K. Dass and Er. Rajnish Verma: "Higher Engineering Mathematics" S. Chand
	Publication, 3rd Ed., 2014.
1	James Stewart: "Calculus" Cengage Publications, 7th Ed., 2019.

Course Title:	Physics for CV Stream		
Course Code:	22PHYC12/22	CIE Marks	50
Course Type (Theory/Practical/Integrated )	Integrated	SEE Marks	50
		Total Marks	100
Teaching Hours/Week (L:T:P: S)	2:2:2:0	Exam Hours	03
Total Hours of Pedagogy	40 hours Theory + 10-12 Lab slots	Credits	04
Module-1 (8 Hor	urs)		

#### Module -I: Oscillations and Shock waves:

**Oscillations:** Simple Harmonic motion (SHM), Differential equation for SHM (No derivation), Sprigs: Stiffness Factor and its Physical Significance, Series and Parallel combination of springs (Derivation), Types of Springs and their applications. Theory of Damped oscillations (Qualitative), Types of Damping (Graphical Approach). Engineering applications of Damped oscillations, Theory of Forced oscillations (Qualitative), Resonance, Sharpness of resonance. Numerical Problems.

Shock waves: Mach number and Mach Angle, Mach Regimes, Definition and Characteristics of Shock waves, Construction and working of Reddy Shock tube, Applications of Shock Waves, Numerical problems.

#### Pre-requisites: Basics of Oscillations

#### Self-learning: Simple Harmonic motion, Differential equation for SHM

Module-2 (8 Hours)

Elasticity

Stress-Strain Curve, Stress hardening and softening. Elastic Moduli, Poisson's ratio, Relation between Y, n and  $\sigma$  (with derivation), mention relation between K, Y and  $\sigma$ , limiting values of Poisson's ratio. Beams, Bending moment and derivation of expression, Cantilever and I section girder and their Engineering Applications, Elastic materials (qualitative). Failures of engineering materials - Ductile fracture, Brittle fracture, Stress concentration, Fatigue and factors affecting fatigue (only qualitative explanation), Numerical problems.

#### Pre requisites: Elasticity, Stress & Strain

Self-learning: Stress-Strain Curve

Module-3 (8 Hours)

#### Acoustics, Radiometry and Photometry:

Acoustics: Introduction to Acoustics, Types of Acoustics, Reverberation and reverberation time, Absorption power and Absorption coefficient, Requisites for acoustics in auditorium, Sabine's formula (derivation), Measurement of absorption coefficient, Factors affecting the acoustics and remedial measures, Sound Insulation and its measurements. Noise and its Measurements, Impact of Noise in Multi-storied buildings.

**Radiometry and Photometry:** Radiation Quantities, Spectral Quantities, Relation between luminance and Radiant quantities, Reflectance and Transmittance, Photometry (cosine law and inverse square law).

#### Prerequisites: Basics of Sound, Waves & light properties.Self-learning: Introduction to acoustics.

Module-4 (8 Hours)

#### Photonics:

#### LASER

Properties of a LASER Beam, Interaction of Radiation with Matter, LASER action, Population Inversion, Metastable State, Requisites of a LASER System, Semiconductor LASER, LASER Range Finder, LIDAR, Road Profiling, Bridge Deflection, Speed Checker, Numerical Problems.

#### **Optical Fiber**

Principle and Construction of Optical Fibers, Acceptance angle and Numerical Aperture (NA), Expression for NA, Modes of Propagation, Attenuation and Fiber Losses, Fiber Optic Displacement Sensor, Fiber Optic Temperature Sensor, Numerical Problems

Pre requisite: Properties of light.

Self-learning: Total Internal Reflection.

Module-5 (8 Hours)

#### Natural hazards and Safety

Introduction, Earthquake, (general characteristics, Physics of earthquake, Richter scale of measurement and earth quake resistant measures), Tsunami (causes for tsunami, characteristics, adverse effects, risk reduction measures, engineering structures to withstand tsunami), Landslide (causes such as excess rain fall, geological structure, human excavation etc., types of land slide, adverse effects, engineering solution for landslides). Forest Fires and detection using remote sensing. Fire hazards and fire protection, fire-proofing materials, fire safety regulations and firefighting equipment-Prevention and safety measures. Numerical Problems.

Pre requisite: Oscillations. Self-learning: Richter scale.

#### Course outcome (Course Skill Set)

At the end of the course the student will be able to:

CO1 Elucidate the concepts in oscillations, waves, elasticity and material failures

CO<sub>2</sub> Summarize concepts of acoustics in buildings and explain the concepts in radiation and photometry

CO3 **Discuss** the principles photonic devices and their application relevant to civil engineering.

CO4 Describe the various natural hazards and safety precautions.

CO5 Practice working in groups to conduct experiments in physics and perform precise and honest measurements.

#### Laboratory Component:

Any Ten Experiments have to be completed from the list of experiments

Note: The experiments have to be classified into

e) Exercise

f) Demonstration

g) Structured Inquirv

h) Open Ended

Based on the convenience classify the following experiments into above categories. Select at least one simulation/spreadsheet activity.

#### <u>List of Experiments</u>

- Determination of Young's modulus of the material of the given bar Uniform Bending. 1.
- 2. Determination of Rigidity modulus of the Material of the wire using Torsional Pendulum.
- 3. Study of Forced Mechanical Oscillations and Resonance.
- 4 Study of the frequency response of Series & Parallel LCR circuits.
- 5. Determination of Fermi Energy of the given Conductor.
- Determination of Resistivity by Four Probe Method. 6.
- Determination of effective spring constant of the given springs in series and parallel combinations. 7.
- Determination of Young's modlus of the material of the given bar Single Cantilever. 8
- Determination of the Moment of Inertia of the given irregular body using torsional pendulum. 9.
- 10. Determination of Wavelength of Laser using Diffraction Grating.
- 11. Determination of Acceptance angle and Numerical Aperture of the given Optical Fiber.
- 12. Determination of the Radius of Curvature of the given Plano Convex Lens by setting Newton's Rings.
- 13. Step Interactive Physical Simulations.
- 14. Study of motion using spread Sheets
- 15. Application of Statistics using Spread Sheets.
- 16. PHET Interactive Simulations :
- 17. Fly wheel
- 18. Interference of air wedge

(https://phet.colorado.edu/en/simulations/filter?subjects=physics&type=html,prototype)

		ENGINEERING MECHANICS		
	ubject code	22CIV13/23	Credit: 0	
	lours/Week:	2 hours. (Theory)	SEE: 50 Marks	5
То	tal hours: 50	CIE: 50 Marks	SEE: 3 hours	
		MODULES		TeachingHours
system, pr diagrams,	inciple of transmissibit moment, Principle of	<b>Module-I</b> <b>tem:</b> Basic dimensions and units, Idealisation lity of a force, composition of forces, resoluti moments, couple, Resultant of coplanar of rent force system, Numerical examples.	ion of a force, Free body	10 hours
<b>Equilibrium</b> Equilibrium Equilibrium	of coplanar force sy of coplanar parallel	<b>Module-II</b> stem: Equilibrium of coplanar concurrent for force system, types of beams, types of lo urrent force system, support reactions of s	adings, types of supports,	10 hours
subjected to	fullous types of louds,	Module-III		
method of j Friction: Int	oints and method of se troduction, laws of Co	n, Classification of trusses, analysis of plane ctions, Numerical examples. ulomb friction, equilibrium of blocks on hori ction, wedge friction Numerical examples.		10 hours
quadrant ar up sections <b>Moment of</b> product of inertia of re	nd sector of a circle us , Numerical examples. f <b>inertia of plane area</b> inertia, radius of gyr ectangular, triangular	Module -IV uction, Locating the centroid of rectangle, t ing method of integration, centroid of compo s: Introduction, Rectangular moment of inerti- ation, parallel axes theorem, perpendicular and circular areas from the method of integra p sections,, Numerical examples.	site areas and simple built a, polar moment of inertia, axis theorem, moment of	10 hours
composite a	areas and simple built t	Module-V		
Numerical Projectiles: <b>Kinetics:</b> I	ion: Introduction, Disp examples on linear mo Introduction, numerica ntroduction, D 'Alemb connected bodies inclu	lacement, speed, velocity, acceleration, accel		10 hours
1. Bansal		n Beohar and Ahmad Ali Khan, Basic Civil	Engineering andEngineering	Mechanics,
		Civil Engineering and Engineering Mechanics	, 2014, EBPB	
<ol> <li>Irving</li> <li>Irving</li> <li>Hibble</li> <li>Timosl</li> <li>Bhavik</li> <li>Reddy</li> </ol>	P. and Johnston E. R., H. Shames, Engineerin r R. C., Engineering M nenko S, Young D. H., tatti S S, Engineering M Vijaykumar K and Sur	Mechanics for Engineers, Statics and Dynami g Mechanics, 2019, Prentice-Hall. echanics: Principles of Statics and Dynamics, Rao J. V., Engineering Mechanics, 5th Editio fechanics, 2019, New Age International esh Kumar K, Engineering Mechanics, 2011,	2017, Pearson Press. n, 2017, Pearson Press.	
	come (Course Skill Se		-	
	of the course the stude			<u>_</u>
CO1	Comprehend the act	t of a force system and resolution of a force ion for forces, moments, and other types of	loads on rigid bodies and co	mpute the
CO2	ronativa forcas			1
	reactive forces	resistance offered by different planes		
CO2 CO3 CO4	Analyse the frictional	resistance offered by different planes and compute the moment of inertia of sections		

	Course	Title: INTRO	DUCTION TO ELECTRICAL EN	NGINEERING	
Course Code			22ESC142/242	CIE:	50
Number of Lectu	re Hours/W	eek	3hours (Theory)	SEE:	50
Total Number of	Lecture Ho	urs	40	SEE ]	Hours: 03
			Modules		Hours
Power Generatio	n: Hydel, Nu n: Faraday	ıclear, Solar &	Module - I tional energy resources; wind power generation (Block Diag romagnetic Induction, Fleming's rule		8hrs
			Module - II		
phase, phase diffe and current relatio R-L, Active power	rence, avera nship with p r, reactive po	ge value, RMS hasor diagram ower and appar	ge and current, waveform, time period S value, form factor, peak factor. (or s in R, L, and C circuits. Concept of ent power. Concept of power factor.	nly definitions) Voltage Impedance. Analysis of (Simple Numerical).	8hrs
Three Phase Circ	cuits: Advan	tages, three ph	ase connections (Star & Delta) (Exclu <u>Module - III</u>	uding Derivations).	
DC Machines:			Module - III		
generators. Relation	on between in ciple of open	nduced emf and ration, back end	constructional details, induced emi d terminal voltage. Simple numerical mf and its significance. Torque equ		8hrs
Applications of D			Module - IV		
transformers, EM numerical. Three-	F equation, phase induct	losses, variati ion	inciple of operation, Types and con ion of losses with respect to load.	Efficiency and simple	8hrs
			d, Principle of operation, constructind its significance simple numerical.	onal features of motor,	
types – squitter ca	ge allu woul	iu ioioi. Siip ai	Module – V		
load. Electricity Bill: F etc. Definition of of electricity bill f Equipment Safet and demerits.	Power rating "unit" used or domestic y measures	of household a for consumptio consumers. Working prin	wiring: casing, capping. Two way a appliances including air conditioners on of electrical energy, two-part elec nciple of Fuse and Miniature circuit Earthing and its types, Safety Precauti	s, PCs, laptops, printers, tricity tariff, calculation breaker (MCB), merits	8hrs
			s will be asked, two from each module		ver five
questions, selectin					
Reference books:					
<ol> <li>J P Tiwar</li> <li>Rajendra</li> <li>B L Ther</li> <li>B L Ther</li> <li>B L Ther</li> <li>D.P. Kotl</li> <li>V. N. Mit</li> </ol>	i," Basic Ele Prasad "Fun aja& A K Th aja& A K Th nari and Nag ttal and Arvi	damentals of E heraja" Electric heraja" ABC of rath "Theory a nd Mittal;, " B	ering", New age Publications, 2nd ed Electrical Engineering", PHI 3rd editi- cal Technology", Vol 1, 2nd edition. f Electrical Engineering", 2nd edition and Problems in electrical Engineering asic Electrical Engineering" McGraw- rical Engineering" Sanguine Technica	on, 2014. g", PHI edition 2011. / Hill.	
			urse, the student will have the abili		
Course Code	CO's		Course Outcome		
		Understand the	e concepts of various energy sources		
	CO2	Apply the basi	c Electrical laws to solve circuits.		
22ESC142/242			nstruction and operation of various E	lectrical Machines.	
22ESC142/ 242			· · · · · · · · · · · · · · · · · · ·		
CO4         Identify suitable Electrical machine for practical implementation.           CO5         Explain the concepts of electric power transmission and distribution, electric protective devices and personal safety measures.					tricity billir

	Professional Writing Skills in English	1		
Subject code	22PWS26	Credit:	0	
Hours/Week:				
Total hours: 15	CIE: 50 Marks	SEE: 1.5 hours		
	MODULES		TeachingHours	
	Module-I			
Identifying Common Frrors in	Writing and Speaking English: Commo	n errors identification		
	nd phrasal verbs, Auxiliary verbs and thei		3 hours	
	non errors in Subject-verb agreement, Se			
errors identification in Tenses. Wor		quence of renses and		
	Module-II			
Nature and Style of sensible	writing: Organizing Principles of Para	graphs in Documents		
-	sion, Importance of Proper Punctuation			
-	ence arrangements and Corrections activiti	-	3 hours	
Contractions, Collocations, Word Order	6	es. misplaced mounters,		
	Module-III			
<u> </u>	ractices: Technical writing process, Introduct bes of Reports. Introduction to Technical Pro	-		
	of Technical Proposals. Scientific Writing Pro		3 hours	
-	& Sentence Improvement, Cloze Test and The			
	Module -IV			
Professional Communication for	r Employment: Listening Comprehension	n Tumor of Listoning		
	ening Skills. Reading Comprehension, Tips	•••	3 hours	
	employment/business Letters, Resume vs	-		
	yment, Emails, Blog Writing and Memos.	. Dio Data, Fronic, CV.		
	t Workplace: Group Discussion and P	rofessional Interviews		
	GD and Pl's, Intra and Interpersonal C			
	ation Skills and its importance in GD and	Interview. Presentation	2 h avve	
skills and Formal Presentations by Students, Strategies of Presentation Skills.3 hours				
Text book:				
	<b>kills in English"</b> published by Fillip Learnin			
γ υ τ	per AICTE 2018 Model Curriculum) (ISBN-	978-93-5350-047-4) Cer	ngage	
learningIndia Pvt Limited	l [Latest Edition 2019].			
Reference books:				
	N.P.Sudharshana and C.Savitha, Cambridge	•		
	on by Gajendra Singh Chauhan and Et al, (IS	BN-978-93-5350-050-4)	, Cengage	
6	[Latest Revised Edition] - 2019.			
	on – Principles and Practice, Third Edition I	by Meenakshi Raman and	Sangeetha	
Sharma,Oxford Universit			LJ 2015	
	mmar & Composition by Wren and Martin munication – Second Edition by M Ashraf I			
Private	<b>Humedion</b> – Second Edition by M Asin an		ion (mula)	
Course outcome (Course Sl	xill Set)			
At the end of the course the student				
	ntify the Common Errors in Writing and Sp	eaking.		
	nnical writing and Presentation skills.			
	posals properly and make them to Write go	od technical reports.		
	and Workplace communication skills.	1.00		
<b>CO5</b> To learn about Technic	ques of Information Transfer through prese	ntation in different level.		

### ಸಾಂಸ್ಕೃತಿಕ ಕನ್ನಡ - ಕನ್ನಡ ಬಲ್ಲ ಮತ್ತು ಕನ್ನಡ ಮಾತೃಭಾಷೆಯ ವಿದ್ಯಾರ್ಥಿಗಳಿಗೆ ನಿಗದಿಪಡಿಸಿದ ಪಠ್ಯಕ್ರಮ

		<u></u>			
Subject Code	Subject	Stream	Th– Tut-Pr	Credits	
22KSK17 / 27	SAMSKRUTHIKA KANNADA	Humanities	1 - 0 - 0	01	
		and Social			
		Sciences			
		( <b>H.S.S</b> )			
CIE : 50	SEE : 50 SEE : 1 hours 30 Minu	ites		Total :	15 Hours

Course objectives : ಸಾಂಸ್ಕೃತಿಕ ಕನ್ನಡ ಪಠ್ಯ ಕಲಿಕೆಯ ಉದ್ದೇಶಗಳು: The course (22KSK17/27) will enable the students,

- 1. ಪದವಿ ವಿದ್ಯಾರ್ಥಿಗಳಾಗಿರುವುದರಿಂದ ಕನ್ನಡ ಭಾಷೆ, ಸಾಹಿತ್ಯ ಮತ್ತು ಸಂಸ್ಕೃತಿಯ ಪರಿಚಯ ಮಾಡಿಕೊಡುವುದು.
- 2. ಕನ್ನಡ ಸಾಹಿತ್ಯದ ಪ್ರಧಾನ ಭಾಗವಾದ ಆಧುನಿಕಪೂರ್ವ ಮತ್ತು ಆಧುನಿಕ ಕಾವ್ಯಗಳನ್ನು ಪರಿಚಯಿಸಿವುದು.
- ವಿದ್ಯಾರ್ಥಿಗಳಲ್ಲಿ ಸಾಹಿತ್ಯ ಮತ್ತು ಸಂಸ್ಕೃತಿಯ ಬಗ್ಗೆ ಅರಿವು ಹಾಗೂ ಆಸಕ್ತಿಯನ್ನು ಮೂಡಿಸುವುದು.
- 4. ತಾಂತ್ರಿಕ ವ್ಯಕ್ತಿಗಳ ಪರಿಚಯವನ್ನು ಹಾಗೂ ಅವರುಗಳ ಸಾಧಿಸಿದ ವಿಷಯಗಳನ್ನು ಪರಿಚಯಿಸುವುದು.
- 5. ಸಾಂಸ್ಕೃತಿಕ, ಜನಪದ ಹಾಗೂ ಪ್ರವಾಸ ಕಥನಗಳ ಪರಿಚಯ ಮಾಡಿಕೊಡುವುದು.

ಘಟಕ -1 ಕನ್ನಡ ಸಂಸ್ಕೃತಿ ಮತ್ತು ಭಾಷೆ ಕುರಿತಾದ ಲೇಖನಗಳು (03 hours of pedagogy
1. ಕರ್ನಾಟಕ ಸಂಸ್ಕೃತಿ - ಹಂಪ ನಾಗರಾಜಯ್ಯ
2. ಕರ್ನಾಟಕದ ಏಕೀಕರಣ : ಒಂದು ಅಪೂರ್ವ ಚರಿತ್ರೆ - ಜಿ. ವೆಂಕಟಸುಬ್ಬಯ್ಯ
3. ಆಡಳಿತ ಭಾಷೆಯಾಗಿ ಕನ್ನಡ - ಡಾ. ಎಲ್. ತಿಮ್ಮೇಶ ಮತ್ತು ಪ್ರೋ. ವಿ. ಕೇಶವಮೂರ್ತಿ
ಘಟಕ - 2 ಆಧುನಿಕ ಪೂರ್ವದ ಕಾವ್ಯ ಭಾಗ (03 hours of pedagogy)
<ol> <li>ವಚನಗಳು : ಬಸವಣ್ಣ, ಅಕ್ಕಮಹಾದೇವಿ, ಅಲ್ಲಮಪ್ರಭು, ಆಯ್ದಕ್ಕಿ ಮಾರಯ್ಯ,</li> </ol>
ಜೇಡರದಾಸಿಮಯ್ಯ, ಆಯ್ದಕ್ಕಿ ಲಕ್ಕಮ್ಮ.
2. ಕೀರ್ತನೆಗಳು : ಅದರಿಂದೇನು ಫಲ ಇದರಿಂದೇನು ಫಲ – ಪುರಂದರದಾಸರು
ತಲ್ಲಣಿಸದಿರು ಕಂಡ್ಯ ತಾಳು ಮನವೇ - ಕನಕದಾಸರು
3. ತತ್ವಪದಗಳು : ಸಾವಿರ ಕೊಡಗಳ ಸುಟ್ಟು - ಶಿಶುನಾಳ ಶರೀಫ
ಘಟಕ -3 ಆಧುನಿಕ ಕಾವ್ಯಭಾಗ (03 hours of pedagogy)
<ol> <li>ಡಿವಿಜಿ ರವರ ಮಂಕುತಿಮ್ಮನ ಕಗ್ಗದಿಂದ ಅಯ್ದ ಕೆಲವು ಭಾಗಗಳು</li> </ol>
2. ಕುರುಡು ಕಾಂಚಾಣ : ದಾ.ರಾ. ಬೇಂದ್ರೆ
3. ಹೊಸಬಾಳಿನ ಗೀತೆ : ಕುವೆಂಪು
ಘಟಕ - 4 ತಾಂತ್ರಿಕ ವ್ಯಕ್ತಿಗಳ ಪರಿಚಯ (03 hours of pedagogy)
1. ಡಾ. ಸರ್. ಎಂ. ವಿಶ್ವೇಶ್ವರಯ್ಯ : ವ್ಯಕ್ತಿ ಮತ್ತು ಐತಿಹ್ಯ – ಎ. ಎನ್. ಮೂರ್ತಿರಾವ್
2. ಕರಕುಶಲ ಕಲೆಗಳು ಮತ್ತು ಪರಂಪರೆಯ ವಿಜ್ಞಾನ : ಕರೀಗೌಡ ಬೀಚನಹಳ್ಳಿ
ಘಟಕ - 5 ಸಾಂಸ್ಕೃತಿಕ, ಜನಪದ ಕಥೆ ಮತ್ತು ಪ್ರವಾಸ ಕಥನ (03 hours of pedagogy)
1. ಯುಗಾದಿ : ವಸುಧೇಂದ್ರ
2. ಮೆಗಾನೆ ಎಂಬ ಗಿರಿಜನ ಪರ್ವತ : ಹಿ.ಚಿ. ಬೋರಲಿಂಗಯ್ಯ
Course outcome (Course Skill Set)
ಸಾಂಸ್ಕೃತಿಕ ಕನ್ನಡ (22KSK17/27) ಪಠ್ಯ ಕಲಿಕೆಯ ನಂತರ ವಿದ್ಯಾರ್ಥಿಗಳಲ್ಲಿ :
At the end of the course the student will be able to:
CO1 ಕನ್ನಡ ಭಾಷೆ, ಸಾಹಿತ್ಯ ಮತ್ತು ಕನ್ನಡದ ಸಂಸ್ಕೃತಿಯ ಕುರಿತು ಅರಿವು ಮೂಡಿರುತ್ತದೆ.
CO2 ಕನ್ನಡ ಸಾಹಿತ್ಯದ ಆಧುನಿಕ ಪೂರ್ವ ಮತ್ತು ಆಧುನಿಕ ಕಾವ್ಯಗಳನ್ನು ಸಾಂಕೇತಿಕವಾಗಿ ಕಲಿತು ಹೆಚ್ಚಿನ ಓದಿಗೆ
ಮತ್ತು ಜ್ಞಾನಕ್ಕೆ ಸ್ಪೂರ್ತಿ ಮೂಡುತ್ತದೆ.
CO3 ವಿದ್ಯಾರ್ಥಿಗಳಲ್ಲಿ ಸಾಹಿತ್ಯ ಮತ್ತು ಸಂಸ್ಕೃತಿಯ ಬಗ್ಗೆ ಅರಿವು ಹಾಗೂ ಆಸಕ್ತಿಯನ್ನು ಹೆಚ್ಚಾಗುತ್ತದೆ.
CO4 ತಾಂತ್ರಿಕ ವ್ಯಕ್ತಿಗಳ ಪರಿಚಯ ಹಾಗೂ ಅವರುಗಳ ಸಾಧಿಸಿದ ವಿಷಯಗಳನ್ನು ತಿಳಿದುಕೊಂಡು ನಾಡಿನ ಇನ್ನಿತರ
ವ್ಯಕ್ತಿಗಳ ಬಗ್ಗೆ ತಿಳಿದುಕೊಳ್ಳಲು ಕೌತುಕತೆ ಹೆಚ್ಚಾಗುತ್ತದೆ.
CO5 ಸಾಂಸ್ಕೃತಿಕ, ಜನಪದ ಹಾಗೂ ಪ್ರವಾಸ ಕಥನಗಳ ಪರಿಚಯ ಮಾಡಿಕೊಡುವುದು.

5	ಸಾಂಸ್ಕೃತಿಕ ಕನ್ನಡ
5	- 9 at at and a state of the set of the
	ತಾ. ಹಿ.ಚಿ.ಬೋರಲಿಂಗಯ್ಯ ಮತ್ತು ಡಾ. ಎಲ್. ತಿಮ್ಮೇಶ,
	ಪ್ರಕಟಣೆ : ಪ್ರಸಾರಾಂಗ,
	ವಿಶ್ವೇಶ್ವರಯ್ಯ ತಾಂತ್ರಿಕ ವಿಶ್ವವಿದ್ಯಾಲಯ, ಬೆಳಗಾವಿ.
ವಿಶೇಷ ಸೂಚನೆ : 1. ಮೇಲಿನ	ರ ಪಠ್ಯಕ್ರಮಕ್ಕೆ ಸೀಮಿತವಾಗಿ ಅಂತಿಮ ಪರೀಕ್ಷೆಯ ಪ್ರಶ್ನೆಪತ್ರಿಕೆ ಇರುತ್ತದೆ.
2. ಮೇಲಿನ	i ಪಠ್ಯಕ್ರಮವನ್ನು ಹೊರತುಪಡಿಸಿದ ಸಾಂಸ್ಕೃತಿಕ ಕನ್ನಡ ಪಠ್ಯಪುಸ್ತಕದಲ್ಲಿನ  ಉಳಿದ ಪದ್ಯ &
	ಾಗ ಹಾಗೂ ಇತರ ಲೇಖನಗಳನ್ನು ಹೆಚ್ಚುವರಿ ಪೂರಕ ಓದಿಗಾಗಿ ಬಳಸಿಕೊಳ್ಳಬಹುದು. ಅಂತಿಮ ಯಲ್ಲಿ ಈ ಪಾಠಗಳಿಂದ ಪ್ರಶ್ನೆಗಳನ್ನು ಕೇಳಲಾಗುವುದಿಲ್ಲ.
3. ಹೆಚ್ಚಿನ	ಮಾಹಿತಿ ಮತ್ತು ವಿವರಣೆಗಳಿಗೆ ಡಾ. ಎಲ್. ತಿಮ್ಮೇಶ (9900832331) ಇವರನ್ನು ಸಂಪರ್ಕಿಸಿ.
4. ಮಾದರಿ	) ಪ್ರಶ್ನೆಪತ್ರಿಕೆ, ಕೋರ್ಸ್ ಆಯ್ಕೆ ಮಾಹಿತಿ, ಅಧ್ಯಯನ ಸಾಮಗ್ರಿ & ಬಹು ಆಯ್ಕೆ ಮಾದರಿಯ
ಪ್ರಶ್ನೆಗಳ	ಳ ಕೈಪಿಡಿಗಾಗಿ ವಿಶ್ವವಿದ್ಯಾಲಯದ ವೆಬ್ ಸೈಟ್ ನೋಡುವುದು.

- For active participation of students instruct the students to prepare Flow
   Organising Group wise discussions Connecting to placement activities
   Quizzes and Discussions, Seminars and assignments.

# ಬಳಕೆ ಕನ್ನಡ - baLake Kannada (Kannada for Usage)

## ಕನ್ನಡ ಕಲಿಕೆಗಾಗಿ <u>ನಿಗದಿ</u>ಪಡಿಸಿದ ಪಠ್ಯಪುಸ್ತಕ - (Prescribed Textbook to Learn Kannada)

Subject Code	Subject	Stream	Th– Tut-Pr	Credits
22KBK17 / 27	BALAKE KANNAI	DA Humanities	1 - 0 - 0	01
		and Social		
		Sciences		
		(H.S.S)		
CIE : 50	SEE : 50	SEE : 1 hours 30 Minutes		Tota

Total : 15 Hours

### Course objectives : ಬಳಕೆ ಕನ್ನಡ ಪಠ್ಯ ಕಲಿಕೆಯ ಉದ್ದೇಶಗಳು:

The course (22KBK17/27) will enable the students,

- 1. To Create the awareness regarding the necessity of learning local language for comfortable and healthy life.
- 2. To enable learners to Listen and understand the Kannada language properly.
- 3. To speak, read and write Kannada language as per requirement.
- 4. To train the learners for correct and polite conservation.
- 5. To know about Karnataka state and its language, literature and General information about this state.

# Course outcome (Course Skill Set)

# ಬಳಕೆ ಕನ್ನಡ ಪಠ್ಯ ಕಲಿಕೆಯಿಂದ ವಿದ್ಯಾರ್ಥಿಗಳಿಗೆ ಆಗುವ ಅನುಕೂಲಗಳು ಮತ್ತು ಫಲಿತಾಂಶಗಳು:

At the end of the course the student will be able to:

C01	To understand the necessity of learning of local language for comfortable life.
C02	To speak, read and write Kannada language as per requirement.
CO3	To communicate (converse) in Kannada language in their daily life with kannada speakers.
CO4	To Listen and understand the Kannada language properly.
C05	To speak in polite conservation.

### Module - 1

### (03 hours of pedagogy)

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

Module - 2	(03 hours of pedagogy)
<ol> <li>ನಾಮಪದಗಳ ಸಂಬಂಧಾರ್ಥಕ ರೂಪಗಳು, ಸಂದೇಹಾಸ್ಪದ ಪ್ರಶ್ನೆ</li> </ol>	ಗಳು ಮತ್ತು ಸಂಬಂಧವಾಚಕ
ನಾಮಪದಗಳು - Possessive forms of nouns, dubitive ques	tion and Relative nouns
<ol> <li>ಗುಣ, ಪರಿಮಾಣ ಮತ್ತು ವರ್ಣಬಣ್ಣ ವಿಶೇಷಣಗಳು, ಸಂಖ್ಯಾವಾಚ ೧೭೬೭ ಗ್ರಿ ಗ್ರಿ ಕ್ಷೇಕ್ಷ್ ಗ್ರಾ ಕ್ಷೇಕ್ಷ್ ಗ್ರಿ ಕ್ಷೇಕ್ಷ್ ಗ್ರಿ ಕ್ಷೇಕ್ಷ್ ಗ್ರಾ ಕ್ಷೇಕ್ಷ್ ಗ್ರಾ ಕ್ಷೇಕ್ಷ್ ಗ್ರಾ ಕ್ಷೇಕ್ಷ್ ಗ್ರಾ ಕ್ಷೇಕ್ಷ್ ಗ್ರಾ ಕ್ಷೇಕ್ಷ್ ಕ್ಷೇಕ್ಷ್ ಗ್ರಾ ಕ್ಷ್ಮಾ ಕ್ಷೇಕ್ಷ್ಣ ಕ್ಷೇಕ್ಷ್ಣ ಗ್ರಾ ಕ್ಷಣ್ಣ ಕ್ಷೇಕ್ಷ್ಣ ಗ್ರಾ ಕ್ಷಣ್ಣ ಕ್ಷ್ಮಾ ಕ್ಷ್ಮಾ ಕ್ಷ್ಮಾ ಕ್ಷ್ಮಾ ಕ್ಷ್ಮಾ ಕ್ಷ್ಮಾ ಕ್ಷ್ಮಾ ಕ್ಷ್ಮಾನ್ ಕ್ಷ್ಮಾನ್ ಕ್ಷ್ಮಾ ಕ್ಷ್ಮಾನ್ ಕ್ಷ್ಮಾಣ್ಣ ಕ್ಷ್ಮಾನ್ ಕ ಕ್ಷ್ಮಾನ್ ಕ್ಷ್ಮಾನ್ ಕ್ಷ್ ಕ್ಷ್ಮಾನ್ ಕ್ಷ್ಮಾನ್ ಕ್ಷ್ಮಾನ್ ಕ್ಷ್ಮಾನ್ ಕ್ಷ್ಮಾನ್ ಕ್ಷ್ಮಾನ್ ಕ್ಷ್ಮಾನ್ ಕ್ಷ್ಮಾನ್ ಕ್ಷ್ಮಾನ್ ಕ್ರಾ ಕ್ಷ್ಮಾನ್ ಕ್ಷ್ಮಾನ್ ಕ್ಷ್ಮಾ ಕ್ಷ್ಮಾನ್ ಕ್ಷ್ಮಾನ್ ಕ್ಷ್ಮಾನ್ ಕ್ಷ್ಮಾನ್ ಕ್ಷ್ಮಾನ್ ಕ್ಷ್ಮಾನ್ ಕ್ರ್ಯಾನ್ ಕ್ರ್ಮಾನ್ ಕ್ರಾನ್ ಕ್ರಾ ಕ್ರಾ ಕ್ಷ್ಮಾನ್ ಕ್ರಾನ್ ಕ್ರ್ಮಾನ್ ಕ್ರಾ ಕ್ರ್ಮಾನ್ ಕ್ರಾ ಕ್ರ್ಮಾನ್ ಕ್ರ್ಮಾನ್ ಕ್ರಾ ಕ್ರಾ ಕ್ರ್ಮಾನ್ ಕ್ರ್ಮಾನ್ ಕ್ರಾ ಕ್ರಾ ಕ್ರಾನ್ ಕ್ರ ಕ್ರ್ಮಾನ್ ಕ್ರಾ ಕ್ರಾರ್ ಕ್ರಾ ಕ್ರಾ ಕ್ರಾ ಕ್ರಾ ಕ್ರಾರ್ ಕ್ರಾ ಕ್ರಾ</li></ol>	ಕಕಗಳು Qualitative, Quantitative and
Colour Adjectives, Numerals 3. ಕಾರಕ ರೂಪಗಳು ಮತ್ತು ವಿಭಕ್ತಿ ಪ್ರತ್ಯಯಗಳು –ಸಪ್ತಮಿ ವಿಭಕ್ತಿ ಪ್ರತ್ಯಯ – (ಆ, ಅದು, ಅ	ತ್ತು. ಅಲಿ) – Predictive Forms, Locative Case
Module - 3	
	(03 hours of pedagogy
<ol> <li>ಚತುರ್ಥಿ ವಿಭಕ್ತಿ ಪ್ರತ್ಯಯದ ಬಳಕೆ ಮತ್ತು ಸಂಖ್ಯಾವಾಚಕಗಳು - Dative Cases, a</li> </ol>	
2. ಸಂಖ್ಯಾಗುಣವಾಚಕಗಳು ಮತ್ತು ಬಹುವಚನ ನಾಮರೂಪಗಳು -Ordinal numer	
<ol> <li>ನ್ಯೂನ/ನಿಷೇಧಾರ್ಥಕ ಕ್ರಿಯಾಪದಗಳು &amp; ವರ್ಣ ಗುಣವಾಚಕಗಳು – Defective/I</li> </ol>	Negative Verbs & Colour Adjectives
Module- 4	(03 hours of pedagogy
1. ಅಪ್ಪಣೆ / ಒಪ್ಪಿಗೆ, ನಿರ್ದೇಶನ, ಪ್ರೋತ್ಸಾಹ ಮತು ಒತ್ತಾಯ ಆರ್ಥರೂಪ	ತ ಪದಗಳು ಮತ್ತು ವಾಕ್ಯಗಳು
Permission, Commands, encouraging and Urging words (Imperativ	ve words and sentences)
2. ಸಾಮಾನ್ಯ ಸಂಭಾಷಣೆಗಳಲ್ಲಿ ದ್ವಿತೀಯ ವಿಭಕ್ತಿ ಪ್ರತ್ಯಯಗಳು ಮತ್ತು ಸ	ಂಭವನೀಯ ಪ್ರಕಾರಗಳು
Accusative Cases and Potential Forms used in General Communication	ion
3. "ಇರು ಮತ್ತು ಇರಲ್ಲ" ಸಹಾಯಕ ಕ್ರಿಯಾಪದಗಳು, ಸಂಭಾವ್ಯಸೂಚಕ	ಮತ್ತು ನಿಷೇಧಾರ್ಥಕ ಕ್ರಿಯಾ ಪದಗಳು -
Helping Verbs "iru and iralla", Corresponding Future and Negation Ve	rbs
4. ಹೋಲಿಕೆ (ತರತಮ), ಸಂಬಂಧ ಸೂಚಕ, ವಸ್ತು ಸೂಚಕ ಪ್ರತ್ಯಯಗಳ	ು ಮತ್ತು. ನಿಷೇಧಾರ್ಥಕ ಪದಗಳ ಬಳಕೆ-
Comparitive, Relationship, Identification and Negation Words	
Module - 5	(03 hours of pedagogy)
<b>1. ಕಾಲ ಮತ್ತು ಸಮಯದ ಹಾಗೂ ಕ್ರಿಯಾಪದಗಳ ವಿವಿಧ ಪ್ರಕಾರಗಳು</b> -D	ifferent types of Tense, Time and Verbs
2. ದ್, -ತ್, - ತು, - ಇತು, - ಆಗಿ, - ಅಲ್ಲ, - ಗ್, -ಕ್, ಇದೆ, ಕ್ರಿಯಾ ಪ್ರತ್ಯಯಗ	ಳೊಂದಿಗೆ ಭೂತ, ಭವಿಷ್ಯತ್ ಮತ್ತು
ವರ್ತಮಾನ ಕಾಲ ವಾಕ್ಯ ರಚನೆ - Formation of Past, Future and Pres	ent Tense Sentences with Verb Forms
3. Kannada Vocabulary List :ಸಂಭಾಷಣೆಯಲ್ಲಿ ದಿನೋಪಯೋಗಿ ಕನ್ನಡ :	ಪದಗಳು -Kannada Words in Conversation
University Prescribed Textbook :	
University Prescribed Textbook : ಬಳಕೆ ಕನ್ನಡ	
ಬಳಕೆ ಕನ್ನಡ	
ಬಳಕೆ ಕನ್ನಡ ಡಾ. ಎಲ್. ತಿಮ್ಮೇಶ	ರ, ಬೆಳಗಾವಿ.
ಬಳಕೆ ಕನ್ನಡ ಡಾ. ಎಲ್. ತಿಮ್ಮೇಶ ಪ್ರಕಟಣೆ : ಪ್ರಸಾರಾಂಗ, ವಿಶ್ವೇಶ್ವರಯ್ಯ ತಾಂತ್ರಿಕ ವಿಶ್ವವಿದ್ಯಾಲಯ	, ಬೆಳಗಾವಿ.
ಬಳಕೆ ಕನ್ನಡ ಡಾ. ಎಲ್. ತಿಮ್ಮೇಶ ಪ್ರಕಟಣೆ : ಪ್ರಸಾರಾಂಗ, ವಿಶ್ವೇಶ್ವರಯ್ಯ ತಾಂತ್ರಿಕ ವಿಶ್ವವಿದ್ಯಾಲಯ ಸೂಚನೆ :	
ಬಳಕೆ ಕನ್ನಡ ಡಾ. ಎಲ್. ತಿಮ್ಮೇಶ ಪ್ರಕಟಣೆ : ಪ್ರಸಾರಾಂಗ, ವಿಶ್ವೇಶ್ವರಯ್ಯ ತಾಂತ್ರಿಕ ವಿಶ್ವವಿದ್ಯಾಲಯ ಸೂಚನೆ : ವಿಶೇಷ ಸೂಚನೆ : 1. ಮೇಲಿನ ಪಠ್ಯಕ್ರಮಕ್ಕೆ ಸೀಮಿತವಾಗಿ ಅಂತಿಮ ಪರೀಕ್ಷೆಯ :	ಪ್ರಶ್ನೆಪತ್ರಿಕೆ ಇರುತ್ತದೆ.
ಬಳಕೆ ಕನ್ನಡ ಡಾ. ಎಲ್. ತಿಮ್ಮೇಶ ಪ್ರಕಟಣೆ : ಪ್ರಸಾರಾಂಗ, ವಿಶ್ವೇಶ್ವರಯ್ಯ ತಾಂತ್ರಿಕ ವಿಶ್ವವಿದ್ಯಾಲಯ ಸೂಚನೆ : ವಿಶೇಷ ಸೂಚನೆ : 1. ಮೇಲಿನ ಪಠ್ಯಕ್ರಮಕ್ಕೆ ಸೀಮಿತವಾಗಿ ಅಂತಿಮ ಪರೀಕ್ಷೆಯ 2. ಮೇಲಿನ ಪಠ್ಯಕ್ರಮವನ್ನು ಹೊರತುಪಡಿಸಿದ ಬಳಕೆ ಕನ್ನಡ	ಪ್ರಶ್ನೆಪತ್ರಿಕೆ ಇರುತ್ತದೆ. 1 ಪಠ್ಯಪುಸ್ತಕದಲ್ಲಿನ ಉಳಿದ ಭಾಗಳನ್ನು
ಬಳಕೆ ಕನ್ನಡ ಡಾ. ಎಲ್. ತಿಮ್ಮೇಶ ಪ್ರಕಟಣೆ : ಪ್ರಸಾರಾಂಗ, ವಿಶ್ವೇಶ್ವರಯ್ಯ ತಾಂತ್ರಿಕ ವಿಶ್ವವಿದ್ಯಾಲಯ ಸೂಚನೆ : ವಿಶೇಷ ಸೂಚನೆ : 1. ಮೇಲಿನ ಪಠ್ಯಕ್ರಮಕ್ಕೆ ಸೀಮಿತವಾಗಿ ಅಂತಿಮ ಪರೀಕ್ಷೆಯ 2. ಮೇಲಿನ ಪಠ್ಯಕ್ರಮವನ್ನು ಹೊರತುಪಡಿಸಿದ ಬಳಕೆ ಕನ್ನಡ ಹೆಚ್ಚುವರಿ ಪೂರಕ ಓದಿಗಾಗಿ ಬಳಸಿಕೊಳ್ಳಬಹುದು. ಅಂತಿನ	ಪ್ರಶ್ನೆಪತ್ರಿಕೆ ಇರುತ್ತದೆ. 1 ಪಠ್ಯಪುಸ್ತಕದಲ್ಲಿನ ಉಳಿದ ಭಾಗಳನ್ನು
ಬಳಕೆ ಕನ್ನಡ ಡಾ. ಎಲ್. ತಿಮ್ಮೇಶ ಪ್ರಕಟಣೆ : ಪ್ರಸಾರಾಂಗ, ವಿಶ್ವೇಶ್ವರಯ್ಯ ತಾಂತ್ರಿಕ ವಿಶ್ವವಿದ್ಯಾಲಯ ಸೂಚನೆ : ವಿಶೇಷ ಸೂಚನೆ : 1. ಮೇಲಿನ ಪಠ್ಯಕ್ರಮಕ್ಕೆ ಸೀಮಿತವಾಗಿ ಅಂತಿಮ ಪರೀಕ್ಷೆಯ 2. ಮೇಲಿನ ಪಠ್ಯಕ್ರಮವನ್ನು ಹೊರತುಪಡಿಸಿದ ಬಳಕೆ ಕನ್ನಡ	ಪ್ರಶ್ನೆಪತ್ರಿಕೆ ಇರುತ್ತದೆ. 1 ಪಠ್ಯಪುಸ್ತಕದಲ್ಲಿನ ಉಳಿದ ಭಾಗಳನ್ನು
ಬಳಕೆ ಕನ್ನಡ ಡಾ. ಎಲ್. ತಿಮ್ಮೇಶ ಪ್ರಕಟಣೆ : ಪ್ರಸಾರಾಂಗ, ವಿಶ್ವೇಶ್ವರಯ್ಯ ತಾಂತ್ರಿಕ ವಿಶ್ವವಿದ್ಯಾಲಯ ಸೂಚನೆ : ವಿಶೇಷ ಸೂಚನೆ : 1. ಮೇಲಿನ ಪಠ್ಯಕ್ರಮಕ್ಕೆ ಸೀಮಿತವಾಗಿ ಅಂತಿಮ ಪರೀಕ್ಷೆಯ : 2. ಮೇಲಿನ ಪಠ್ಯಕ್ರಮವನ್ನು ಹೊರತುಪಡಿಸಿದ ಬಳಕೆ ಕನ್ನಡ ಹೆಚ್ಚುವರಿ ಪೂರಕ ಓದಿಗಾಗಿ ಬಳಸಿಕೊಳ್ಳಬಹುದು. ಅಂತಿನ ಪ್ರಶ್ನೆಗಳನ್ನು ಕೇಳಲಾಗುವುದಿಲ್ಲ.	ಪ್ರಶ್ನೆಪತ್ರಿಕೆ ಇರುತ್ತದೆ. 1 ಪಠ್ಯಪುಸ್ತಕದಲ್ಲಿನ ಉಳಿದ ಭಾಗಳನ್ನು ಮ ಪರೀಕ್ಟೆಯಲ್ಲಿ ಈ ಪಾಠಗಳಿಂದ
ಬಳಕೆ ಕನ್ನಡ ಡಾ. ಎಲ್. ತಿಮ್ಮೇಶ ಪ್ರಕಟಣೆ : ಪ್ರಸಾರಾಂಗ, ವಿಶ್ವೇಶ್ವರಯ್ಯ ತಾಂತ್ರಿಕ ವಿಶ್ವವಿದ್ಯಾಲಯ ಸೂಚನೆ : ವಿಶೇಷ ಸೂಚನೆ : 1. ಮೇಲಿನ ಪಠ್ಯಕ್ರಮಕ್ಕೆ ಸೀಮಿತವಾಗಿ ಅಂತಿಮ ಪರೀಕ್ಷೆಯ 2. ಮೇಲಿನ ಪಠ್ಯಕ್ರಮವನ್ನು ಹೊರತುಪಡಿಸಿದ ಬಳಕೆ ಕನ್ನಡ ಹೆಚ್ಚುವರಿ ಪೂರಕ ಓದಿಗಾಗಿ ಬಳಸಿಕೊಳ್ಳಬಹುದು. ಅಂತಿನ ಪ್ರಶ್ನೆಗಳನ್ನು ಕೇಳಲಾಗುವುದಿಲ್ಲ.	ಪ್ರಶ್ನೆಪತ್ರಿಕೆ ಇರುತ್ತದೆ. ತ ಪಠ್ಯಪುಸ್ತಕದಲ್ಲಿನ ಉಳಿದ ಭಾಗಳನ್ನು ಮ ಪರೀಕ್ಷೆಯಲ್ಲಿ ಈ ಪಾಠಗಳಿಂದ (9900832331) ಇವರನ್ನು ಸಂಪರ್ಕಿಸಿ.

Pattern of question paper2. SEE Paper shall be set for 50 questions, each carrying 1 mark. The pattern of the question paper is MCQ

		INNOVATION and DESIGN THINK	KING				
Subje	ect code	21IDT18/28	Credit: 01				
Hour	s/Week:	1 hour. (Theory)	SEE: 50 Marks				
Total ł	nours: 25	CIE: 50 Marks	SEE: 2 hours				
		MODULES		Hours			
Shared model i	<b>Design thinking</b> n team-based design	<b>Module-I</b> - Theory and practice in Design think	ting – Explore presentation signers				
-	lobe – MVP or Prototyping         Learni         Introduction about the design thinking: Chalk and Talk method Theory and practice through presentation MVP and Prototyping through live examples and videos						
		Module-II					
design – Collabo	n interaction capture pration in distributed I	-					
Teaching- Learning Process	collaborated enabled	e success of collaborated design thinking	d analysis Simulation exercises for				
		Module-III					
<b>Design Think</b> Design Thinking Prototyping	g to Business Proces	ss modeling – Agile in Virtual collabora					
Teaching-Learning Process		sign thinking and business acceptance of the collaborated prototyping	the design Simulation on the role of				
	virtual eco-system I	or collaborated prototyping Module -IV					
Value redefinition	on - Extreme Competi- bing, Strategy and Org Business model exa	<ul> <li>A – Strategic Foresight - Change – Sense Mition – experience design - Standardization ganization – Business Model design.</li> <li>Amples of successful designs tudents on the success of design Live projection</li> </ul>	- Humanization - Creative Culture				
		Module-V					
Design thinking	workshop Design Th	inking Work shop Empathize, Design, Ide	eate, Prototype and Test				
Teaching- Learning Process		king workshop from the expect and then					
Text book:							
5. John (Inte 6. Roge	rnational edition) Sec	O'Brien and John P. Hutchinson, "Enginee ond Edition, 2013. n of Business: Why Design Thinking is the		1			
7. Hass – Ap	o Plattner, Christoph ply", Springer, 2011	Meinel and Larry Leifer (eds), "Design Thi					
	ol", John Wiley & Sc	nking for Strategic Innovation: What They ons 2013.	Can't Teach You at Businessor Design				
		1.Shahin, "Engineering Design Process", C	engage Learning Second Edition 2011				
4. Book Publ (Aut	c - Solving Problems ishing) Hardcover – 2 hor).	with Design Thinking - Ten Stories of What 0 Sep 2013 by Jeanne Liedtka (Author), A	at Works (Columbia Business School	•			
	ne (Course Skill Set)						
	he course the student						
	preciate various desig						
		design ideas through differenttechnique					
		e of reverse Engineering to Understand pr	oducts				
CO4 Dr	aw technical drawing	tor design ideas					

Р	OOJYA DO	DDAPPA AI	PA COLLEGE OF ENGI	NEERING, KALABI	URA	٩GI	[						
-	-			and Examinations-2									
		`	OBE) and Choice Based Cre (Physics Creation)		ttec	tive	e fro	m t	he ac	cade	nic ye	ar 2022	-23)
I Semester (CSEStream)Sl.Course and CourseNoCode			Course Title			Teaching Exan Hours/Week				amination			Cre dits
				D/PSB	The	Tutori	Pract		Duration	CIEM	arks SEE	Mirks Total Marks	
					L	Т	Р	S	D.		a So a		
1	ASC(IC)	22MATS11	Mathematics for CSE Stream-I	Maths	2	2	2	0	03	50	50	100	04
2	ASC(IC)	22PHYS12	Physics for CSE stream	Physics	2	2	2	0	03	50	50	100	04
3	ESC	22POP13	Principles of Programming Using C	CSE	2	0	2	0	03	50	50	100	03
4	ESC-I	22ESC143	Introduction to Electronics Engineering	Respective Engg Dept	3	0	0	0	03	50	50	100	03
5	ETC-I	22ETC15X	Emerging Technology Courses	Any Engg Dept	3	0	0	0	03	50	50	100	03
6	AEC	22ENG16	Communicative English	Humanities	1	0	0	0	1.5	50	50	100	01
7	HSMC	22KSK17 22KBK17	Samskrutika Kannada/ Balake Kannada	Humanities	1	0	0	0	1.5	50		100	01
8	AEC/SDC	22IDT18	Innovation and Design Thinking	Any Dept	1	0	0	0	02	50		100	01
	·	·	. 2	TOTAL						400	400	800	20

II Se	emester (CS	E Stream)		(For studen	ts at	tend	led	1st	seme	ster ur	nder Ph	ysics G	roup)
SI. No	Course an Code	d Course	Course Title T						Exar	ninatio	on		Credits
				asa/dt	Theor	Tutorial	Practic	SDA	Duration	CIE Mark	SEE Marks	Total Marks	
1	ASC(IC)	22MATS21	Mathematics for CSE	Maths	<b>L</b> 2	T 2	<b>P</b> 2	<b>S</b> 0		50	50	100	04
1	ASC(IC)	22WIA1521	Stream -II	iviauis	2	2	2	U	05	50	50	100	04
2	ASC(IC)	22CHES22	Chemistry for CSE Stream	Chemistry	2	2	2	0	03	50	50	100	04
3	ESC	22CED23	Computer-Aided Engineering Drawing	Civil/Mech Engg dept	2	0	2	0	03	50	50	100	03
4	ESC-II	22ESC242	Introduction to Electrical Engineering	Respective Engg. Dept	3	0	0	0	03	50	50	100	03
	ETC-II	2PLC25X	Programming Language Courses- I&II		3	0	0	0	03	50	50	100	03
6	AEC	22PWS26	Professional Writing Skills in English	Humanities	1	0	0	0	1.5	50	50	100	01
7	HSMS	22ICO17/27	Indian Constitution	Humanities	1	0	0	0	01	50	50	100	01
8	HSMS	22SFH28	Scientific Foundations of Health	Any Dept	1	0	0	0	01	50	50	100	01
				TOTAL			1			400	400	800	20

		e Based Credit System (CBC m the academic year 2022-2.		
	Course Code	22MATS11	CIE Marks	50
-	Credits	04	SEE Marks	50
-	Course Type	Integrated		
	Contact Hours/Week (L-T-P)	2-2-2	Total Marks	100
			Exam Hours	
	Contact Hours of Pedagogy	40 hours Theory +10 or 12 Lab slots	Exam Hours	03
L				
	Module-1	Calculus	(6L+3T)	
ntroductio	n to polar coordinates and curva	ture relating to Computer	Science and	
engineering	<b>.</b>			
Polar coordi	nates, Polar curves, angle between	the radius vector and the tar	ngent, angle between two	curves. Pedal
equations. C	Curvature and Radius of curvature -	- Cartesian, Parametric, Pola	r and Pedal forms. Simpl	e Problems.
Self-study:	Center and circle of curvature, evo	olutes and involutes.		
Application	s: Computer graphics, Image proc			
	Module-2 Series Expansion			
	n of series expansion and partial	differentiation in Comput	er Science &	
	g applications.			
	l Maclaurin's series expansion for		v) – problems.	
	te forms – L'Hospital's rule-Probl			
	rentiation, total derivative - differe	1	ons. Jacobian and	
	Iaxima and minima for a function			
	Euler's theorem and problems. Me			ngle constraint
	s: Series expansion in computer p	rogramming, Errors and app	roximations, calculators	
	s: L1, L2 and L3)			
	e-3 Ordinary Differential Equat		(5L+3T)	
	n to first-order ordinary differen	ntial equations pertaining t	o the applications for	
	Science & Engineering.			
Linear and H	Bernoulli's differential equations. I	Exact and reducible to exact	differential equations, Int	tegrating factor
1 (∂M	$\left(-\frac{\partial N}{\partial x}\right)$ and $\frac{1}{M}\left(\frac{\partial N}{\partial x}-\frac{\partial M}{\partial y}\right)$ .			
on $\frac{1}{N}$	$-\frac{\partial T}{\partial t}$ and $\frac{T}{\partial t} = \frac{\partial T}{\partial t}$ .	Orthogonal trajectories, L-F	R & C-R circuits. Problem	ns.
$N \bigcup \partial y$	$\partial x$ ) M ( $\partial x \partial y$ )			
Non-linear	differential equations: Introducti	on to general and singular so	lutions, Solvable for p	
	ut's equations, reducible to Clairau		I	
•	Applications of ODEs, Solvable for	-		
	s of ordinary differential equation		v2(RBT Levels: L1, L2	and L3)
	Module-4 Integra		(6L+2T)	/
T	n to Integral Calculus in Compu			
introductio				
		triple integrals, evaluation of		
Multiple In		triple integrals, evaluation of olar coordinates. Application		
Multiple In change of or	der of integration, changing into p			
Multiple In change of or Volume by o	der of integration, changing into p double integral. Problems.	olar coordinates. Application	ns to find Area and	Simple
Multiple In change of or Volume by o Beta and G	der of integration, changing into p	olar coordinates. Application	ns to find Area and	Simple
Multiple In change of or Volume by o Beta and G Problems.	rder of integration, changing into p double integral. Problems. <b>amma functions:</b> Definitions, pro	olar coordinates. Application perties, relation between Bet	ns to find Area and	Simple
Multiple In change of or Volume by o Beta and G Problems. Self-Study:	rder of integration, changing into p double integral. Problems. <b>amma functions:</b> Definitions, pro Center of gravity, Duplication for	olar coordinates. Application perties, relation between Bet mula.	ns to find Area and and Gamma functions.	
Multiple In Change of or Volume by o Beta and G Problems. Self-Study: Application	der of integration, changing into p double integral. Problems. <b>amma functions:</b> Definitions, pro Center of gravity, Duplication for s: Antenna and wave propagation.	olar coordinates. Application perties, relation between Bet mula. Calculation of optimum val	ns to find Area and and Gamma functions.	
Multiple In Change of or Volume by o Beta and G Problems. Self-Study: Application	rder of integration, changing into p double integral. Problems. <b>amma functions:</b> Definitions, pro Center of gravity, Duplication for <b>is:</b> Antenna and wave propagation, models.( <b>RBT Levels: L1, L2 an</b>	olar coordinates. Application perties, relation between Bet mula. Calculation of optimum val <b>d L3</b> )	ns to find Area and a and Gamma functions. ue in various geometries.	. Analysis of
Multiple In change of or Volume by o Beta and G Problems. Self-Study: Application probabilistic	rder of integration, changing into p double integral. Problems. amma functions: Definitions, pro Center of gravity, Duplication for is: Antenna and wave propagation, models.(RBT Levels: L1, L2 and Module-5 Linear Al	olar coordinates. Application perties, relation between Bet mula. . Calculation of optimum val d L3) gebra	ns to find Area and and Gamma functions.	. Analysis of
Multiple In change of or Volume by o Beta and G Problems. Self-Study: Application probabilistic	rder of integration, changing into p double integral. Problems. amma functions: Definitions, pro Center of gravity, Duplication for as: Antenna and wave propagation, models.(RBT Levels: L1, L2 and Module-5 Linear Al ora related to Computer Science	olar coordinates. Application perties, relation between Bet mula. Calculation of optimum val d L3) gebra & Engineering.	ns to find Area and a and Gamma functions. ue in various geometries. (5L+3T) Intro	. Analysis of oduction of
Multiple In change of or Volume by o Beta and G Problems. Self-Study: Application probabilistic inear algeb Elementa	rder of integration, changing into p double integral. Problems. amma functions: Definitions, pro Center of gravity, Duplication for s: Antenna and wave propagation, models.(RBT Levels: L1, L2 and Module-5 Linear Al ora related to Computer Science ary row transformation of a matrix,	olar coordinates. Application perties, relation between Bet mula. Calculation of optimum val d L3) gebra & Engineering. Rank of a matrix. Consisten	ns to find Area and a and Gamma functions. ue in various geometries. (5L+3T) Intro acy and Solution of system	Analysis of oduction of m of linear
Multiple In change of or Volume by o Beta and G Problems. Self-Study: Application probabilistic inear algeb Elementa equations - (	rder of integration, changing into p double integral. Problems. amma functions: Definitions, pro Center of gravity, Duplication for s: Antenna and wave propagation, models.(RBT Levels: L1, L2 am Module-5 Linear Al ora related to Computer Science ary row transformation of a matrix, Gauss-elimination method, Gauss-	olar coordinates. Application perties, relation between Bet mula. (Calculation of optimum val d L3) gebra & Engineering. Rank of a matrix. Consisten Jordan method and approxin	ns to find Area and a and Gamma functions. ue in various geometries. (5L+3T) Intro acy and Solution of system thate solution by Gauss-Se	Analysis of oduction of m of linear eidel method.
Multiple In change of or Volume by of Beta and G Problems. Self-Study: Application probabilistic linear algeb Elementa equations - G Eigenvalues	rder of integration, changing into p double integral. Problems. amma functions: Definitions, pro Center of gravity, Duplication for s: Antenna and wave propagation, models.(RBT Levels: L1, L2 and Module-5 Linear Al ora related to Computer Science ary row transformation of a matrix, Gauss-elimination method, Gauss- and Eigenvectors, Rayleigh's pow	olar coordinates. Application perties, relation between Bet mula. Calculation of optimum val d L3) gebra & Engineering. Rank of a matrix. Consisten Jordan method and approxin yer method to find the domin	ns to find Area and a and Gamma functions. ue in various geometries. (5L+3T) Intro icy and Solution of system nate solution by Gauss-Se ant Eigenvalue and Eige	Analysis of oduction of m of linear eidel method. nvector.
Multiple In change of or Volume by of Beta and G Problems. Self-Study: Application probabilistic linear algeb Elementa equations - ( Eigenvalues Self-Study:	rder of integration, changing into p double integral. Problems. amma functions: Definitions, pro Center of gravity, Duplication for s: Antenna and wave propagation, models.(RBT Levels: L1, L2 and Module-5 Linear Al ora related to Computer Science ary row transformation of a matrix, Gauss-elimination method, Gauss- and Eigenvectors, Rayleigh's pow Solution of system of equations by	olar coordinates. Application perties, relation between Bet mula. Calculation of optimum val d L3) gebra & Engineering. Rank of a matrix. Consisten Jordan method and approxin yer method to find the domin	ns to find Area and a and Gamma functions. ue in various geometries. (5L+3T) Intro icy and Solution of system nate solution by Gauss-Se ant Eigenvalue and Eige	Analysis of oduction of m of linear eidel method. nvector.
Multiple In change of or Volume by of Beta and G Problems. Self-Study: Application probabilistic linear algeb Elementa equations - G Eigenvalues Self-Study: Cayley- Har	rder of integration, changing into p double integral. Problems. amma functions: Definitions, pro Center of gravity, Duplication for is: Antenna and wave propagation, models.(RBT Levels: L1, L2 and Module-5 Linear Al ora related to Computer Science ary row transformation of a matrix, Gauss-elimination method, Gauss- and Eigenvectors, Rayleigh's pow Solution of system of equations by nilton theorem.	olar coordinates. Application perties, relation between Bet mula. Calculation of optimum val <b>d L3</b> ) <b>gebra</b> & Engineering. Rank of a matrix. Consisten Jordan method and approxin ver method to find the domin y Gauss-Jacobi iterative meth	ns to find Area and a and Gamma functions. ue in various geometries. (5L+3T) Intro (5L+3T) Intro tota and Solution of system hate solution by Gauss-Se ant Eigenvalue and Eige hod. Inverse of a square r	Analysis of oduction of m of linear eidel method. nvector.
Multiple In change of or Volume by of Beta and G Problems. Self-Study: Application probabilistic inear algeb Elementa equations - O Eigenvalues Self-Study: Cayley- Har Application	rder of integration, changing into p double integral. Problems. amma functions: Definitions, pro Center of gravity, Duplication for is: Antenna and wave propagation, models.(RBT Levels: L1, L2 and Module-5 Linear Al ora related to Computer Science ary row transformation of a matrix, Gauss-elimination method, Gauss- and Eigenvectors, Rayleigh's pow Solution of system of equations by nilton theorem. is: Boolean matrix, Network Analy	olar coordinates. Application perties, relation between Bet mula. (Calculation of optimum val <b>d L3</b> ) <b>gebra</b> & Engineering. Rank of a matrix. Consisten Jordan method and approxin yer method to find the domin y Gauss-Jacobi iterative meth	ns to find Area and a and Gamma functions. ue in various geometries. (5L+3T) Intro (5L+3T) Intro tota and Solution of system hate solution by Gauss-Se ant Eigenvalue and Eige hod. Inverse of a square r	Analysis of oduction of m of linear eidel method. nvector.
Multiple In change of or Volume by of Beta and G Problems. Self-Study: Application probabilistic linear algeb Elementa equations - O Eigenvalues Self-Study: Cayley- Har Application system. Opti	rder of integration, changing into p double integral. Problems. amma functions: Definitions, pro Center of gravity, Duplication for is: Antenna and wave propagation, models.(RBT Levels: L1, L2 and Module-5 Linear Al ora related to Computer Science ary row transformation of a matrix, Gauss-elimination method, Gauss- and Eigenvectors, Rayleigh's pow Solution of system of equations by nilton theorem.	olar coordinates. Application perties, relation between Bet mula. Calculation of optimum val <b>d L3</b> ) <b>gebra</b> & Engineering. Rank of a matrix. Consisten Jordan method and approxin ver method to find the domin y Gauss-Jacobi iterative meth vsis, Markov Analysis, Critic L2 and L3)	ns to find Area and a and Gamma functions. ue in various geometries. (5L+3T) Intro (5L+3T) Intro (5L	Analysis of oduction of m of linear eidel method. nvector.

1									
1	2D plots for Cartesian and polar curves								
2	Finding angle between polar curves, curvature and radius of curvature of a given curve								
3	Finding partial derivatives, Jacobian and plotting the graph								
4	Applications to Maxima and Minima of two variables								
5	Solution of first-order differential equation and plotting the graphs								
6	Program to compute surface area, volume and centre of gravity								
7	Evaluation of improper integrals								
8	Numerical solution of system of linear equations, test for consistency and graphical								
	representation								
9	Solution of system of linear equations using Gauss-Seidel iteration								
10	Compute eigen values and eigen vectors and find the largest and smallest eigen value by								
	Rayleigh power method.								
	ested software's: Mathematica/MatLab/Python/Scilab								
	ter End Examination (SEE):								
	SEE will be conducted by Institute as per the scheduled timetable, with common question								
	for the course (duration 03 hours)								
	The question paper will have ten questions. Each question is set for 20 marks.								
	There will be 2 questions from each module. Each of the two questions under a module (with a								
	naximum of 3 sub-questions), <b>should have a mix of topics</b> under that module.								
	The students have to answer 5 full questions, selecting one full question from each module.								
	e outcome (Course Skill Set)								
	end of the course the student will be able to:								
CO 1									
	differentiation to compute rate of change of multivariate functions								
CO 2									
CO 3									
	integrals and their usage in computing area and volume.								
CO 4	J U J I I								
	eigen values and eigenvectors								
CO 5	5								
	MATHEMATICA/MATLAB/ PYTHON/ SCILAB								
	sted Learning Resources:								
	(Title of the Book/Name of the author/Name of the publisher/Edition and Year)								
Text B									
	<b>B. S. Grewal</b> : "Higher Engineering Mathematics", Khanna publishers, 44th Ed., 2021.								
	E. Kreyszig: "Advanced Engineering Mathematics", John Wiley & Sons, 10th Ed., 2018.								
	ence Books								
	V. Ramana: "Higher Engineering Mathematics" McGraw-Hill Education, 11th Ed., 2017								
	Srimanta Pal & Subodh C. Bhunia: "Engineering Mathematics" Oxford University Press, 3rd Ed.,								
2016.	J D Pali and Manich Caval: "A taythook of Engineering Methametics" Laymi								
	<b>N.P Bali and Manish Goyal:</b> "A textbook of Engineering Mathematics" Laxmi ublications, 10th Ed., 2022.								
	C. Ray Wylie, Louis C. Barrett: "Advanced Engineering Mathematics" McGraw – Hill Book Co.,								
	prk, 6th Ed., 2017.								
	<b>Gupta C.B, Sing S.R and Mukesh Kumar:</b> "Engineering Mathematic for Semester I and II", Mc-Graw								
	lucation(India) Pvt. Ltd 2015.								
	<b>I. K. Dass and Er. Rajnish Verma:</b> "Higher Engineering Mathematics" S. Chand								
	Publication, 3rd Ed., 2014.								
	ames Stewart: "Calculus" Cengage Publications, 7th Ed., 2019.								
	David C Lay: "Linear Algebra and its Applications", Pearson Publishers, 4th Ed., 2018.								
	Gareth Williams: "Linear Algebra with applications", Jones Bartlett Publishers Inc., 6th								
	., 2017.								
Lu									

Course Title:	Physics for CSE Stream					
Course Code:	22PHYS12/22	CIE Marks	50			
Course Type	Integrated	SEE Marks	50			
(Theory/Practical/Integrated)		Total Marks	100			
Teaching Hours/Week (L:T:P: S)	2:2:2:0	Exam Hours	03			
Total Hours of Pedagogy	40 hours Theory + 10-12 Lab slots	Credits	04			
Module-1 (8 Hours)						

#### Laser and Optical Fibers:

**LASER**: Characteristic properties of a LASER beam, Interaction of Radiation with Matter, Einstein's A and B Coefficients and Expression for Energy Density (Derivation), Laser Action, Population Inversion, Metastable State, Requisites of a laser system, Semiconductor Diode Laser, Applications: Bar code scanner, Laser Printer, Laser Cooling(Qualitative), Numerical Problems.

**Optical Fiber**: Principle and Structure, Propagation of Light, Acceptance angle and Numerical Aperture (NA), Derivation of Expression for NA, Modes of Propagation, RI Profile, Classification of Optical Fibers, Attenuation and Fiber Losses, Applications: Fiber Optic networking, Fiber Optic Communication. Numerical Problems

### Pre requisite: Properties of light Self-learning: Total Internal Reflection

#### Module-2 (8 Hours)

#### **Quantum Mechanics:**

de Broglie Hypothesis and Matter Waves, de Broglie wavelength and derivation of expression by analogy, Phase Velocity and Group Velocity, Heisenberg's Uncertainty Principle and its application (Non existence of electron inside the nucleus - Non Relativistic), Principle of Complementarity, Wave Function, Time independent Schrödinger wave equation (Derivation), Physical Significance of a wave function and Born Interpretation, Expectation value, Eigen functions and Eigen Values, Particle inside one dimensional infinite potential well, Quantization of Energy States, Waveforms and Probabilities. Numerical Problems.

#### Pre requisite: Wave–Particle dualism

Self-learning: de Broglie Hypothesis

#### Module-3 (8 Hours)

#### Dielectric Properties:

polar and non-polar dielectrics.. Types of polarization mechanism(Electrical Polarization Mechanisms). Equation for internal field in liquids and solids (1D case & 3D solid). Classius-Mossoti equation(Derivation). Frequency dependence of dielectric constant/polarization. Numerical. Ferroelectric materials, Characteristic properties: Hysteresis loop and Curie Temperature. Application of dielectrics in transformers, Capacitors, Electrical Insulation. Numerical Problems.

### **Pre-requisites: Classical Free Electron Theory**

Self-learning: Dielectrics Basics

#### Module-4 (8 Hours)

#### **Electrical Properties of Materials and Applications Electrical Conductivity in metals**

Resistivity and Mobility, Concept of Phonon, Matheissen's rule, Failures of Classical Free Electron Theory, Assumptions of Quantum Free Electron Theory, Fermi Energy, Density of States, Fermi Factor, Variation of Fermi Factor With Temperature and Energy. Numerical Problems.

#### Superconductivity

Introduction to Super Conductors, Temperature dependence of resistivity, Meissner's Effect, Critical Field, Temperature dependence of Critical field, Types of Super Conductors, BCS theory (Qualitative), Quantum Tunnelling, High Temperature superconductivity, Josephson Junctions (Qualitative), DC and RF SQUIDs (Qualitative), Applications in Quantum Computing: Charge, Phase and Flux qubits, Numerical Problems.

#### Pre requisites: Basics of Electrical conductivitySelf-learning: Resistivity and Mobility

#### Module-5 (8 hours)

#### **Applications of Physics in computing:**

#### **Physics of Animation**:

Taxonomy of physics based animation methods, Frames, Frames per Second, Size and Scale, Weight and Strength, Motion and Timing in Animations, Constant Force and Acceleration, The Odd rule, Odd-rule Scenarios, Motion Graphs, Examples of Character Animation: Jumping, Parts of Jump, Jump Magnification, Stop Time, Walking: Strides and Steps, Walk Timing. Numerical Problems

Statistical Physics for Computing: Descriptive statistics and inferential statistics, Poisson distribution and modeling the probability of proton decay, Normal Distributions (Bell Curves), Monte Carlo Method: Determination of Value of  $\pi$ . Numerical Problems.

#### Pre requisites: Motion in one dimension, ProbabilitySelf-learning: Frames, Frames per Second

#### Course outcome (Course Skill Set)

At the end of the course the student will be able to:

CO1 **Describe** the principles of LASERS and Optical fibers and their relevant applications.

CO2 **Discuss** the basic principles of the Quantum Mechanics and its application in Quantum Computing.CO3 **Summarize** the essential properties of Dielectric superconductors and its applications in qubits.

CO4 **Illustrate** the application of physics in material sensing temperature resistance sensing materials.

CO5 **Practice** working in groups to conduct experiments in physics and **perform** precise and honest neasurements

#### Suggested Learning Resources:

- Books (Title of the Book/Name of the author/Name of the publisher/Edition and Year)
  - 1. Solid State Physics, S O Pillai, New Age International Private Limited, 8<sup>th</sup> Edition, 2018.
  - 2. Engineering Physics by Gupta and Gour, Dhanpat Rai Publications, 2016 (Reprint).
  - 3. A Textbook of Engineering Physics- M.N. Avadhanulu and P.G. Kshirsagar, 10th revised Ed, S. Chand. &Company Ltd, New Delhi.
  - 4. Concepts of Modern Physics, Aurthur Beiser, McGrawhill, 6<sup>th</sup> Edition, 2009.
  - 5. Lasers and Non Linear Optics, B B Loud, New age international, 2011 edition.
  - 6. A Textbook of Engineering Physics by M.N. Avadhanulu, P G. Kshirsagar and T V S Arun Murthy, Eleventhedition, S Chand and Company Ltd. New Delhi-110055.
  - 7. Quantum Computation and Quantum Information, Michael A. Nielsen & Isaac L. Chuang, Cambridge Universities

Press, 2010 Edition.

- 8. Quantum Computing, Vishal Sahani, McGraw Hill Education, 2007 Edition.
- 9. Quantum Computing A Beginner's Introduction, Parag K Lala, Indian Edition, Mc GrawHill, Reprint 2020.
- 10. Engineering Physics, S P Basavaraj, 2005 Edition, Subhash Stores.
- 11. Physics for Animators, Michele Bousquet with Alejandro Garcia, CRC Press, Taylor & Francis, 2016.
- 12. Quantum Computation and Logic: How Quantum Computers Have Inspired Logical Investigations, Maria LuisaDalla Chiara, Roberto Giuntini, Roberto Leporini, Giuseppe Sergioli, Trendsin Logic, Volume 48, Springer.
- 13. Statistical Physics: Berkely Physics Course, Volume 5, F. Reif, McGraw Hill.

Introduction to Superconductivity, Michael Tinkham, McGraw Hill, INC, II Edition

#### Laboratory Component

Any Ten Experiments have to be completed from the list of experiments

Note: The experiments have to be classified into

- a) Exercise
- b) Demonstration
- c) Structured Inquiry
- d) Open Ended

Based on the convenience classify the following experiments into above categories. Select at least one simulation/spreadsheet activity.

#### List of Experiments

- 1. Determination of wavelength of LASER using Diffraction Grating.
- 2. Determination of acceptance angle and numerical aperture of the given Optical Fiber.
- 3. Determination of Magnetic Flux Density at any point along the axis of a circular coil.
- 4. Determination of resistivity of a semiconductor by Four Probe Method
- Study the I-V Characteristics of the Given Bipolar Junction Transistor.
- 6. Determination of dielectric constant of the material of capacitor by Charging and Discharging method.
- Study the Characteristics of a Photo-Diode and to determine the power responsivity / Verification of InverseSquare Law of Intensity of Light.
- 8. Study the frequency response of Series & Parallel LCR circuits.
- 9. Determination of Planck's Constant using LEDs.
- 10. Determination of Fermi Energy of Copper.
- 11. Identification of circuit elements in a Black Box and determination of values of the components.
- 12. Determination of Energy gap of the given Semiconductor.
- 13. Step Interactive Physical Simulations.
- 14. Study of motion using spread Sheets
- 15. Study of Application of Statistics using spread sheets
- 16. PHET Interactive
- 17. Determination od frequency of alternating current using sonometer
- 18. Interference at an Air wedge
- 19. Simulations(https://phet.colorado.edu/en/simulations/filter?subjects=physics&type=html,prototype)

		Principles of Programming using C		
	Subject code Iours/Week:	<b>22POP13/23</b> 2:0:2:0	Credit: 03 SEE: 50 Marks	
Tot	al hours: 30	CIE: 50 Marks	SEE: 3 hours	
Prerequisite: Nil		MODULES		Hours
		Module-I		
Operators and Ex operators, bit wise	pressions, Managing Input/ Output : A operators, special operators. Evaluation d Output. Examples & exercises.	wcharts, Basic Structure of C Program, Executing a "C" program, Constant Arithmetic operators, relational operators, logical operators, assignment o of expression, precedence of arithmetic operators, type conversions	perators, increment/ decrement operators, conditional	6 hours
control Statements.		atement, Simple if statement, the if else , nested if statements, the else if lac tatement, For statement, jumps in loop. Examples & exercises.	lder, Switch statement, The ? : operator, Unconditional	6 hours
	Module-III			nours
		vo dimensional Arrays declaration, Initialization, examples and exercises. Strings from Terminal, Writing strings to Screen, Arithmetic Operations of Contemport of the string string of the string	on Characters, String-handling functions, examples and	6 hours
calls, Function dec Structures and U	<b>Aursion :</b> Need for User-defined Functions, claration, Category of functions, Recursion <b>nions:</b> Defining a Structures, Declaration	of Structure variables, Accessing Structure Members, Structure Initialia Union, Size of Structures, bit fields, examples & exercises.		6 hours
pointer expressions,	Examples & exercises.	Module-V e address of a variable, Declaring pointer variables, Initializing of pointer		6
File Management: Text book:	Defining and opening a file, closing file, in	put, output operations on files, error handling during I/O operations. Examp	bles & exercises.	hours
1. E. Ba		ata Mcgraw Hill Education Private Limited- VEdition, 2016		
Reference book 1. Herb		rth Edition, Tata McGraw Hill Publication, 2017		
<ol><li>Yash</li></ol>	want P. Kanetakar, "Let us C", Fifth Edition W Kernighan & Dennis M Ritchie	n, BPB Publications, 2016.	rentice HallPublisher, Second Edition, 2004.	
		omputer Program: A structured programmingApproach Using C.", Third ed		
Course outcome	(Course Skill Set) course the student will be able to:			
CO1		inderstand the different data typesand Operators in C language		
CO2	Identify and use proper decision /control	constructs for solving differenttype of problems		
CO3 CO4	Apply arrays and S t r i n g s f Demonstrate the use of structures and app	unctions to develop programs for a given problem.		
CO5	Develop C program for real world probl			
		List of Programs - 22POP13/23		
ii) Area o iii) Area o 4. Write a c pro i) To find v iii) To find i 5. Write a c pr i) Print 1 to 6. Write a c pro	of circle bgram using if, ifelse, nested if and else whether number is odd or even. ii) To fi largest of two numbers. iv) To find large ogram using while, do-while and for loopi 10 numbers using all the three looping stat bgram using arrays:	nd whether number is +ve or -ve. est of three numbers. ng statement.	y the same.	
i. Read a str Programmin	gram using strings: ing from keyboard and display the same. g Assignments: the the following programs in C to demons	testa desision moltino usino		
<ul><li>simple if - else an</li><li>Simulation of a 3</li><li>Compute the root</li><li>An electricity both</li></ul>	d switch statements. Simple Calculator. ots of a quadratic equation by accepting the bard charges the following rates for the use			
consumed and p Write and execut while and for ).	rint out the charges. te the following program in C using loopi	ing statements (while, do –	2	
• write a C Progra	am to display the following by reading the 1	number of rows as input,		
	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$			
n <sup>th</sup> row. W 5. Implement Bina: 5. Sort the given se 7. Implement Matr Write and exect	rite and execute the following programs ry Search on Integers. et of N numbers using Bubble sort. ix multiplication and validate the rules of n ite the following programs in C using usi	nultiplication.	uith anneanriata informace	
<ul> <li>Write functions</li> <li>Write and ex</li> <li>Inplement struct</li> </ul>	to implement string operations such as com- secute the following program in C using a tures to read, write and compute average- n	pare, concatenate, and find string length. Use the parameter passing techniq Structure. narks of the students, list the students scoring above and below the average 1	ues.	
<ol> <li>Develop a programmer Write and exec</li> </ol>	ute the following program in C using poi am using pointers to compute the sum, mea ute the following programs in C using fil am to copy a text file to another, read both t	n and standard deviation of all elements stored in an array of N real number e operations.	S.	

INTRODU	JCTION TO ELECTI	RONICS ENGINEER	ING			
Subject Code	22ECSC143/243	22BEE13/23		CIE: 50		
Number of Lecture Hours/Week	3 (Theory) CR	REDITS- 3		SEE: 50		
Total Number of LectureHours	4	0	SEE Hours: 03			
	<b>Teaching Hours</b>					
	08 Hours					
<b>Power Supplies:</b> Block diagram, Half resistance and voltage regulation, Voltag <b>Amplifiers:</b> CE amplifier with and wi saturation modes.	e multipliers.					
suturition modes.	Module-2			08 Hours		
Practical op-amp circuits: Inverting a differentiator. Oscillators: Barkhausen criterion, sinus oscillator (using op-amp), Multivibrators oscillators (Only Concepts, working, and	oidal and non-sinusoida , Single-stage astable o	al oscillators, Ladder n scillator, Crystal contro	etwork			
,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,, _,, _	Module-3			08 Hours		
<b>Boolean Algebra and Logic Circuits:</b> Complements, Basic definitions, Axiom Algebra, Boolean Functions, Canonical a <b>Combinational logic:</b> Introduction, Des	atic Definition of Bool and Standard Forms, Oth	ean Algebra, Basic Th her Logic Operations, D	eorems Digital L	and Properties of Boolean		
<u></u>	Module-4			08 Hours		
<b>Embedded Systems:</b> Definition, Embedded systems vs general computing systems, Classification of Embedded Systems, Major application areas of Embedded Systems, Elements of an Embedded System, Core of the Embedded System, Microprocessor vs Microcontroller, RISC vs CISC <b>Sensors and Interfacing:</b> Instrumentation and control systems, Transducers, Sensors, Actuators, LED, 7-Segment LED Display.						
~	Module-5			08 Hours		
Analog Communication Schemes: Mo Transmitter, Channel or Medium – Hard systems. Types of modulation (only cond Digital Modulation Schemes: Advanta Radio signal transmission Multiple access	lwired and Soft wired, repts) – AM, FM, Conc ges of digital commun	Noise, Receiver, Mult ept of Radio wave prop	tiplexing bagation	g, Types of communication (Ground, space, sky)		

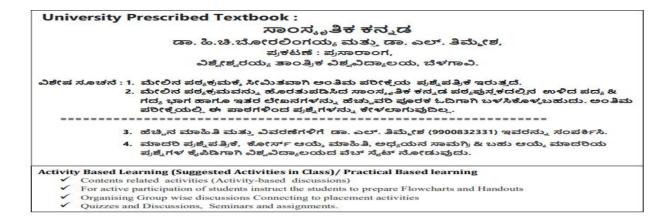
	Communicative English		
Subject code	22ENG16	Credit: 0	1
Hours/Week:	1 hour. (Theory)	SEE: 50 Marks	
Total hours: 15	CIE: 50 Marks	SEE: 1.5 hou	
	MODULES		TeachingHours
	<b>Module-I</b> aglish : Communicative English, Fundame Barriers to Effective Communicative Eng unication Skills.		3 hours
consonants andvowels, Sounds Mispro Accent, Stress Shift and	<b>Module-II</b> e Transcription, English Pronunciation, Pro- nounced, Silent and Non silent Letters, Syll	ables and Structure. Word	3 hours
Grammar and	Module-III ammar and Vocabulary PART - I : on. Question Tags, One Word Substitutes, S	C	3 hours
<b>Basic English Communicative Gran</b> Suffixes,	•		3 hours
Difference between Extempore/Public (MTI), Various Techniques for Neutralization of Mother Tongue Influ	Module-V yment :Information Transfer:Oral Preser Speaking, Communication Guidelines. M ence. Reading and Listening Comprehensio ion, classification, properties and applic	Mother Tongue Influence ns – Exercises.	3 hours
Text book: 5) Communication Skills by S	anjay Kumar & Pushp Lata, Oxford Univers <b>nguage Communication Skills,</b> (ISBN-978 ru - 2022.	•	
<ul> <li>11. Technical Communication India Pvt Limited [Latest Re</li> <li>12. English for Engineers by N</li> <li>13. English Language Commu [Latest Revised Edition] – (I</li> <li>14. A Course in Technical English</li> <li>15. Practical English Usage by</li> <li>Course outcome (Course Skill Set) At the end of the course Communica</li> <li>CO1 Understand and apply th</li> </ul>	.P.Sudharshana and C.Savitha, Cambridge U <b>nication Skills – Lab Manual cum Workh</b> SBN-978-93-86668-45-5), 2019. <b>lish – D Praveen Sam, KN Shoba,</b> Cambri <u>Michael Swan, Oxford University Press – 2</u> <u>tive English (22ENG16) the student will be</u> <u>e Fundamentals of Communication Skills in</u>	University Press – 2018. Dook, Cengage learning Ind dge University Press – 2020 016. able to: their communication skills.	ia Pvt Limited
CO3To impart basic English gCO4Understand and use all ty	phonetics, intonation and enhance pronuncia grammar and essentials of language skills as pes of English vocabulary and language pro Information Transfer through presentation.	per present requirement.	

## ಸಾಂಸ್ಕೃತಿಕ ಕನ್ನಡ - ಕನ್ನಡ ಬಲ್ಲ ಮತ್ತು ಕನ್ನಡ ಮಾತೃಭಾಷೆಯ ವಿದ್ಯಾರ್ಥಿಗಳಿಗೆ ನಿಗದಿಪಡಿಸಿದ ಪಠ್ಯಕ್ರಮ

	~	a 11 3 a	•.		-	
Subject Code	Subject		Stream	Th– Tut-Pr	Credits	
22KSK17 / 27		FHIKA KANNADA	Humanities and	1 - 0 - 0	01	
			Social Sciences (H.S.S)			
CIE : 50	SEE : 50	SEE : 1 hours 30 M		Tot	al : 15 Hou	rs
		್ನಡ ಪಠ್ಯ ಕಲಿಕೆಯ ಉ				15
The course (22KSK1)						
		ರಿಂದ ಕನ್ನಡ ಭಾಷೆ, ಸಾ			_	ನು.
		ಗವಾದ ಆಧುನಿಕಪೂರ್ವ			_	
		್ತು ಸಂಸ್ಕೃತಿಯ ಬಗ್ಗೆ ಅರಿ				
	_	ನ್ನು ಹಾಗೂ ಅವರುಗಳ	-	-	ವುದು.	
5. ಸಾಂಸ್ಕೃತಿಕ		ಪ್ರವಾಸ ಕಥನಗಳ ಪರಿಚ				
	ಘಟಕ -	1 ಕನ್ನಡ ಸಂಸ್ಕೃತಿ ಮತ	ತ್ತು ಭಾಷೆ ಕುರಿತಾದ ಲ	ೇಖನಗಳು (03 ho	urs of pedag	gogy)
	ಸಂಸ್ಕೃತಿ - ಹಂಪ ಸ	-				
		ದು ಅಪೂರ್ವ ಚರಿತ್ರೆ - ಜಿ				
3. ಆಡಳಿತ ಭಾ		ಡಾ. ಎಲ್. ತಿಮ್ಮೇಶ ಮತ				
		2 ಆಧುನಿಕ ಪೂರ್ವದ	61	(03 hours of p	edagogy)	
1. ವಚನಗಳು		ಮಹಾದೇವಿ, ಅಲ್ಲಮಪ್ರಭ	ು, ಆಯ್ದಕ್ಕಿ ಮಾರಯ್ಯ	§*		
2 ಕೀರ್ತನೆಗಳ		ಯ್ಯ, ಆಯ್ದಕ್ಕಿ ಲಕ್ಕಮ್ಮ. ಫಲ ಇದರಿಂದೇನು ಫಲ –	ಪರಂದರದಾಸರು			
2. 0(3)(0)14		್ರಂಡ್ಯ ತಾಳು ಮನವೇ - ಕ	-			
3. ತತ್ವಪದಗಳ		ಳ ಸುಟ್ಟು - ಶಿಶುನಾಳ ಶ				
		-3 ಆಧುನಿಕ ಕಾವ್ಯಭಾಗ	-	(03 hours of pe	dagogy)	
	-	ಗ್ಗದಿಂದ ಅಯ್ದ ಕೆಲವು ಭ	ಸಾಗಗಳು			
	ಂಚಾಣ : ದಾ.ರಾ.					
<u>3.</u> ಹೊಸಬಾಳಿ	ಿನ ಗೀತೆ : ಕುವೆಂಪು					
		4 ತಾಂತ್ರಿಕ ವ್ಯಕ್ತಿಗಳ ಪ		(03 hours of p	edagogy)	
		: ವ್ಯಕ್ತಿ ಮತ್ತು ಐತಿಹ್ಯ – ಎ		re .		
2. きびきいぎの そ	_	ರಂಪರೆಯ ವಿಜ್ಞಾನ : ಕರೀ	-			
1	-	5 ಸಾಂಸ್ಕೃತಿಕ, ಜನಪದ	ರ ಕಥೆ ಮತ್ತು ಪ್ರವಾಸ	ಕಥನ (03 hours	of pedagog	y)
1. ಯುಗಾದಿ:		۲.۹. م۹ م۹ موسام <sup>۹</sup> مسامر				
Course outcome (		ತ : ಹಿ.ಚಿ. ಬೋರಲಿಂಗಯ	0 <sub>8</sub>			
		ಪಠ್ಯ ಕಲಿಕೆಯ ನಂತರ	ವಿದ್ಯಾರ್ಥಿಗಳಲ್ಲಿ :			
At the end of the co			01 H			
	-	್ತು ಕನ್ನಡದ ಸಂಸ್ಕೃತಿಯ				
CO2 ಕನ್ನಡ ಸ	ಾಹಿತ್ಯದ ಆಧುನಿಕ	ಪೂರ್ವ ಮತ್ತು ಆಧುನಿಕ	ಕ ಕಾವ್ಯಗಳನ್ನು ಸಾಂ	ಕೇತಿಕವಾಗಿ ಕಲಿತ	ು ಹೆಚ್ಚಿನ ಓದಿ	<b>ว</b> ที
ಮತ್ತು ಜ	್ಥಾನಕ್ಕೆ ಸ್ಪೂರ್ತಿ ಮ	ೂಡುತ್ತದೆ.				
CO3 ವಿದ್ಯಾರ್ಥಿ	ಗಳಲ್ಲಿ ಸಾಹಿತ್ಯ ವ	ುತ್ತು ಸಂಸ್ಕೃತಿಯ ಬಗ್ಗೆ e	೨ರಿವು ಹಾಗೂ ಆಸಕ್ತಿ <u>,</u>	ಯನ್ನು ಹೆಚ್ಚಾಗುತ್ತ	್ತದೆ.	
		ು ಹಾಗೂ ಅವರುಗಳ ಸಾರಿ				ತರ
		ಲು ಕೌತುಕತೆ ಹೆಚ್ಚಾಗುತ್ತ				
CO5 ಸಾಂಸ್ಕೃತ	ತಿಕ. ಜನಪದ ಹಾಗ	ೂ ಪ್ರವಾಸ ಕಥನಗಳ ಪರಿ	ಚಯ ಮಾಡಿಕೊಡುತ	ನದು.		

#### Pattern of question paper

1. SEE Paper shall be set for 50 questions, each carrying 1 mark. The pattern of the question paper is MCQ



# ಬಳಕೆ ಕನ್ನಡ - baLake Kannada (Kannada for Usage)

## ಕನ್ನಡ ಕಲಿಕೆಗಾಗಿ <u>ನಿಗದಿ</u>ಪಡಿಸಿದ ಪಠ್ಯಪುಸ್ತಕ - (Prescribed Textbook to Learn Kannada)

Subject Code	Subject	Stream	Th– Tut-Pr	Credits
22KBK17 / 27	BALAKE KANNAD	A Humanities	1 - 0 - 0	01
		and Social		
		Sciences		
		(H.S.S)		
CIE : 50	SEE : 50	SEE : 1 hours 30 Minute	5	Tota

Total : 15 Hours

### Course objectives : ಬಳಕೆ ಕನ್ನಡ ಪಠ್ಯ ಕಲಿಕೆಯ ಉದ್ದೇಶಗಳು:

The course (22KBK17/27) will enable the students,

- 1. To Create the awareness regarding the necessity of learning local language for comfortable and healthy life.
- 2. To enable learners to Listen and understand the Kannada language properly.
- 3. To speak, read and write Kannada language as per requirement.
- 4. To train the learners for correct and polite conservation.
- 5. To know about Karnataka state and its language, literature and General information about this state.

# Course outcome (Course Skill Set)

# ಬಳಕೆ ಕನ್ನಡ ಪಠ್ಯ ಕಲಿಕೆಯಿಂದ ವಿದ್ಯಾರ್ಥಿಗಳಿಗೆ ಆಗುವ ಅನುಕೂಲಗಳು ಮತ್ತು ಫಲಿತಾಂಶಗಳು:

At the end of the course the student will be able to:

C01	To understand the necessity of learning of local language for comfortable life.
C02	To speak, read and write Kannada language as per requirement.
CO3	To communicate (converse) in Kannada language in their daily life with kannada speakers.
CO4	To Listen and understand the Kannada language properly.
C05	To speak in polite conservation.

### Module - 1

### (03 hours of pedagogy)

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

Module - 2	(03 hours of pedagogy)
<ol> <li>ನಾಮಪದಗಳ ಸಂಬಂಧಾರ್ಥಕ ರೂಪಗಳು, ಸಂದೇಹಾಸ್ಪದ ಪ್ರಶ್ನೆ</li> </ol>	ಗಳು ಮತ್ತು ಸಂಬಂಧವಾಚಕ
ನಾಮಪದಗಳು - Possessive forms of nouns, dubitive ques	tion and Relative nouns
<ol> <li>ಗುಣ, ಪರಿಮಾಣ ಮತ್ತು ವರ್ಣಬಣ್ಣ ವಿಶೇಷಣಗಳು, ಸಂಖ್ಯಾವಾಚ</li> </ol>	ಕಗಳು Qualitative, Quantitative and
Colour Adjectives, Numerals	(
<ol> <li>ಕಾರಕ ರೂಪಗಳು ಮತ್ತು ವಿಭಕ್ತಿ ಪ್ರತ್ಯಯಗಳು −ಸಪ್ತಮಿ ವಿಭಕ್ತಿ ಪ್ರತ್ಯಯ − (ಆ. ಅದು. ಆ</li> </ol>	ag, ag) - Predictive Forms, Locative Case
Module - 3	(03 hours of pedagogy)
1. ಚತುರ್ಥಿ ವಿಭಕ್ತಿ ಪ್ರತ್ಯಯದ ಬಳಕೆ ಮತ್ತು ಸಂಖ್ಯಾವಾಚಕಗಳು - Dative Cases, a	nd Numerals
2. ಸಂಖ್ಯಾಗುಣವಾಚಕಗಳು ಮತ್ತು ಬಹುವಚನ ನಾಮರೂಪಗಳು -Ordinal numer	als and Plural markers
<ol> <li>ನ್ಯೂನ/ನಿಷೇಧಾರ್ಥಕ ಕ್ರಿಯಾಪದಗಳು &amp; ವರ್ಣ ಗುಣವಾಚಕಗಳು –Defective/I</li> </ol>	Negative Verbs & Colour Adjectives
Module- 4	(03 hours of pedagogy
1. ಅಪ್ಪಣೆ / ಒಪ್ಪಿಗೆ, ನಿರ್ದೇಶನ, ಪ್ರೋತ್ಸಾಹ ಮತು ಒತ್ತಾಯ ಆರ್ಥರೂಪ	ತ ಪದಗಳು ಮತ್ತು ವಾಕ್ಯಗಳು
Permission, Commands, encouraging and Urging words (Imperativ	ve words and sentences)
2. ಸಾಮಾನ್ಯ ಸಂಭಾಷಣೆಗಳಲ್ಲಿ ದ್ವಿತೀಯ ವಿಭಕ್ತಿ ಪ್ರತ್ಯಯಗಳು ಮತ್ತು ಸ	ಂಭವನೀಯ ಪ್ರಕಾರಗಳು
Accusative Cases and Potential Forms used in General Communicati	ion
3. "ಇರು ಮತ್ತು ಇರಲ್ಲ" ಸಹಾಯಕ ಕ್ರಿಯಾಪದಗಳು, ಸಂಭಾವ್ಯಸೂಚಕ	ಮತ್ತು ನಿಷೇಧಾರ್ಥಕ ಕ್ರಿಯಾ ಪದಗಳು -
Helping Verbs "iru and iralla", Corresponding Future and Negation Ve	rbs
4. ಹೋಲಿಕೆ (ತರತಮ) , ಸಂಬಂಧ ಸೂಚಕ, ವಸ್ತು ಸೂಚಕ ಪ್ರತ್ಯಯಗಳ	ು ಮತ್ತು ನಿಷೇಧಾರ್ಥಕ ಪದಗಳ ಬಳಕೆ-
Comparitive, Relationship, Identification and Negation Words	
Module - 5	(03 hours of pedagogy)
1. ಕಾಲ ಮತ್ತು ಸಮಯದ ಹಾಗೂ ಕ್ರಿಯಾಪದಗಳ ವಿವಿಧ ಪ್ರಕಾರಗಳು -Di	ifferent types of Tense, Time and Verbs
2. ದ್, -ತ್, - ತು, - ಇತು, - ಆಗಿ, - ಅಲ್ಲ, - ಗ್, -ಕ್, ಇದೆ, ಕ್ರಿಯಾ ಪ್ರತ್ಯಯಗ	ಳೊಂದಿಗೆ ಭೂತ, ಭವಿಷ್ಯತ್ ಮತ್ತು
ವರ್ತಮಾನ ಕಾಲ ವಾಕ್ಯ ರಚನೆ - Formation of Past, Future and Pres	ent Tense Sentences with Verb Forms
3. Kannada Vocabulary List :ಸಂಭಾಷಣೆಯಲ್ಲಿ ದಿನೋಪಯೋಗಿ ಕನ್ನಡ ಕ	ಪದಗಳು -Kannada Words in Conversation
University Prescribed Textbook :	
ಬಳಕೆ ಕನ್ನಡ	
ಡಾ. ಎಲ್. ತಿಮ್ಮೇಶ	
ಪ್ರಕಟಣೆ : ಪ್ರಸಾರಾಂಗ,	
ವಿಶ್ವೇಶ್ವರಯ್ಯ ತಾಂತ್ರಿಕ ವಿಶ್ವವಿದ್ಯಾಲಯ	. ಬೆಳಗಾವಿ.
れ @27 る :	
ವಿಶೇಷ ಸೂಚನೆ : 1. ಮೇಲಿನ ಪಠ್ಯಕ್ರಮಕ್ಕೆ ಸೀಮಿತವಾಗಿ ಅಂತಿಮ ಪರೀಕ್ಷೆಯ ಸ	
ವಿಶೇಷ ಸೂಚನೆ : 1. ಮೇಲಿನ ಪಠ್ಯಕ್ರಮಕ್ಕೆ ಸೀಮಿತವಾಗಿ ಅಂತಿಮ ಪರೀಕ್ಷೆಯ 2. ಮೇಲಿನ ಪಠ್ಯಕ್ರಮವನ್ನು ಹೊರತುಪಡಿಸಿದ ಬಳಕೆ ಕನ್ನಡ	ತಪಠ್ಯಪುಸ್ತಕದಲ್ಲಿನ ಉಳಿದ ಭಾಗಳನ್ನು
ಹೆಚ್ಚುವರಿ ಪೂರಕ ಓದಿಗಾಗಿ ಬಳಸಿಕೊಳ್ಳಬಹುದು. ಅಂತಿಕ	ತಪಠ್ಯಪುಸ್ತಕದಲ್ಲಿನ ಉಳಿದ ಭಾಗಳನ್ನು
ವಿಶೇಷ ಸೂಚನೆ : 1. ಮೇಲಿನ ಪಠ್ಯಕ್ರಮಕ್ಕೆ ಸೀಮಿತವಾಗಿ ಅಂತಿಮ ಪರೀಕ್ಷೆಯ ನ 2. ಮೇಲಿನ ಪಠ್ಯಕ್ರಮವನ್ನು ಹೊರತುಪಡಿಸಿದ ಬಳಕೆ ಕನ್ನಡ ಹೆಚ್ಚುವರಿ ಪೂರಕ ಓದಿಗಾಗಿ ಬಳಸಿಕೊಳ್ಳಬಹುದು. ಅಂತಿನ ಪ್ರಶ್ನೆಗಳನ್ನು ಕೇಳಲಾಗುವುದಿಲ್ಲ.	ತಪಠ್ಯಪುಸ್ತಕದಲ್ಲಿನ ಉಳಿದ ಭಾಗಳನ್ನು
ವಿಶೇಷ ಸೂಚನೆ : 1. ಮೇಲಿನ ಪಠ್ಯಕ್ರಮಕ್ಕೆ ಸೀಮಿತವಾಗಿ ಅಂತಿಮ ಪರೀಕ್ಷೆಯ ನ 2. ಮೇಲಿನ ಪಠ್ಯಕ್ರಮವನ್ನು ಹೊರತುಪಡಿಸಿದ ಬಳಕೆ ಕನ್ನಡ ಹೆಚ್ಚುವರಿ ಪೂರಕ ಓದಿಗಾಗಿ ಬಳಸಿಕೊಳ್ಳಬಹುದು. ಅಂತಿಕ ಪ್ರಶ್ನೆಗಳನ್ನು ಕೇಳಲಾಗುವುದಿಲ್ಲ.	ತ ಪಠ್ಯಪುಸ್ತಕದಲ್ಲಿನ ಉಳಿದ ಭಾಗಳನ್ನು ಮ ಪರೀಕ್ಟೆಯಲ್ಲಿ ಈ ಪಾಠಗಳಿಂದ
ವಿಶೇಷ ಸೂಚನೆ : 1. ಮೇಲಿನ ಪಠ್ಯಕ್ರಮಕ್ಕೆ ಸೀಮಿತವಾಗಿ ಅಂತಿಮ ಪರೀಕ್ಷೆಯ ನ 2. ಮೇಲಿನ ಪಠ್ಯಕ್ರಮವನ್ನು ಹೊರತುಪಡಿಸಿದ ಬಳಕೆ ಕನ್ನಡ ಹೆಚ್ಚುವರಿ ಪೂರಕ ಓದಿಗಾಗಿ ಬಳಸಿಕೊಳ್ಳಬಹುದು. ಅಂತಿತ ಪ್ರಶ್ನೆಗಳನ್ನು ಕೇಳಲಾಗುವುದಿಲ್ಲ. ===================================	ತ ಪಠ್ಯಪುಸ್ತಕದಲ್ಲಿನ ಉಳಿದ ಭಾಗಳನ್ನು ಮ ಪರೀಕ್ಷೆಯಲ್ಲಿ ಈ ಪಾಠಗಳಿಂದ (9900832331) ಇವರನ್ನು ಸಂಪರ್ಕಿಸಿ.
ವಿಶೇಷ ಸೂಚನೆ : 1. ಮೇಲಿನ ಪಠ್ಯಕ್ರಮಕ್ಕೆ ಸೀಮಿತವಾಗಿ ಅಂತಿಮ ಪರೀಕ್ಷೆಯ ನ 2. ಮೇಲಿನ ಪಠ್ಯಕ್ರಮವನ್ನು ಹೊರತುಪಡಿಸಿದ ಬಳಕೆ ಕನ್ನಡ ಹೆಚ್ಚುವರಿ ಪೂರಕ ಓದಿಗಾಗಿ ಬಳಸಿಕೊಳ್ಳಬಹುದು. ಅಂತಿಕ ಪ್ರಶ್ನೆಗಳನ್ನು ಕೇಳಲಾಗುವುದಿಲ್ಲ.	ತ ಪಠ್ಯಪುಸ್ತಕದಲ್ಲಿನ ಉಳಿದ ಭಾಗಳನ್ನು ಮ ಪರೀಕ್ಷೆಯಲ್ಲಿ ಈ ಪಾಠಗಳಿಂದ (9900832331) ಇವರನ್ನು ಸಂಪರ್ಕಿಸಿ. ನ ಸಾಮಗ್ರಿ & ಬಹು ಆಯ್ಕೆ ಮಾದರಿಯ

Pattern of question paper3. SEE Paper shall be set for 50 questions, each carrying 1 mark. The pattern of the question paper is MCQ

		INNOVATION and DESIGN THI	NKING	
	ect code	21IDT18/28	Credit: 01	
	s/Week:	1 hour. (Theory)	SEE: 50 Marks	
Total	hours: 25	CIE: 50 Marks	SEE: 2 hours	
		MODULES		Hours
	Design thinking Sha	<b>Module-I</b> red model in team-based design – Tl gners across globe – MVP or Prototypin		
Teaching- Learning Process		the design thinking: Chalk and Talk n and Prototyping through live examples and	• • • •	
		<b>Module-II</b> and analysis – Enabling efficient collab in distributed Design	oration in digital space	
Teaching- Learning Process	Case studies on des	sign thinking for real-time interaction a d design thinking Live examples on		
environment	– Scenariobased Pro	51 0	<u> </u>	
Teaching- Learning Process		ign thinking and business acceptance of for collaborated prototyping Module -IV	f the design Simulation on the role of	
Value redefiniti	ion - Extreme Comp prototyping, Strategy Business model exa	<ul> <li>Strategic Foresight - Change – Sense etition – experience design - Standard <u>and Organization – Business Model de</u> amples of successful designs tudents on the success of design Live pr</li> </ul>	lization – Humanization - Creative sign.	
Design thinking		Module-V		
Design Thinking	g Work shop Empathi	ze, Design, Ideate, Prototype and Test		
Teaching- Learning Process	8 hours design thin learning from the w	king workshop from the expect and the orkshop	en presentation by the students on the	
<b>Text boo</b> k: 9. Johr (Inte	ernational edition) Sec			
Busi	iness Press, 2009.	n of Business: Why Design Thinking is t		ard
– A <sub>l</sub> 12. Idris	pply", Springer, 2011 Mootee, "Design Thi	Meinel and Larry Leifer (eds), "Design"		gn
Reference bo	ool", John Wiley & So oks:	ons 2013.		
5. You 6. Boo Publ	sef Haik and Tamer M k - Solving Problems	A.Shahin, "Engineering Design Process" with Design Thinking - Ten Stories of W 20 Sep 2013 by Jeanne Liedtka (Author).	Vhat Works (Columbia Business School	l
	ne (Course Skill Set)			
	the course the student			
	opreciate various desi			
		design ideas through differenttechniqu		
	<u> </u>	ce of reverse Engineering to Understand	t products	
CO4 Di	raw technical drawing	for design ideas		

	As per Choic	ter Science and Engineering the Based Credit System (CBC		
		om the academic year 2022-23		
Со	ourse Code	22MATS21	CIE Marks	50
	edits	04	SEE Marks	50
	ourse Type	Integrated	SEE Warks	50
	ontact Hours/Week (L-T-P)	2-2-2	Total Marks	100
Co	ontact Hours of Pedagogy	40 hours Theory	Exam Hours	03
		+10 or 12 Lab slots		
		ector Calculus	(6L+3T)	
interpretation, s Curvilinear co transformation Self-Study: Vo Applications: • Importance of Higher-order li variation of par Self-Study: Fo undetermined c	rector fields. Gradient, direction solenoidal and irrotational vector ordinates: Scale factors, base between cartesian and curviling olume integral. Conservation of laws, Electrost Module-2 Ordinary Differen higher-order ordinary differ near ODEs with constant coeffic rameters, Cauchy's and Legend rmulation and solution of Cant coefficients. Applications:.(RB Module-3 Vector Space and Vector Space and Linear Tra	or fields. Problems. vectors, Cylindrical polar coo ear systems, orthogonality. Pro- atics, Analysis of streamlines. <b>tial Equations of higher ord</b> <b>ential equations in Compute</b> iccients - Inverse differential op re's homogeneous differential ilever beam. Finding the solut <b>T Levels: L1, L2 and L3</b> ) <b>Linear Transformations</b>	ordinates, Spherical polar oblems. .(RBT Levels: L1,L2 at ler (6L+3T) er Science & Engineer perator, method of l equations - Problems. tion by the method of (6L+2T)	nd L3) ing applications
Change of coor orthogonality.	rmations: Definition and exan dinates, Rank and nullity of a l Problems.			
Self-study: An	gles and Projections. Rotation,			
Self-study: An	Image processing, AI & ML, G	raphs and networks, compute	r graphics.(RBT Levels	
Self-study: An Applications:	Image processing, AI & ML, G Module-4 Num	raphs and networks, compute erical methods -1	r graphics.( <b>RBT Levels</b> (5L+3T)	
Self-study: An Applications: Importance of engineering. Solution of alg Problems. Finite difference Newton's divid Numerical interview.	Image processing, AI & ML, G Module-4 Num rumerical methods for discr ebraic and transcendental equat es, Interpolation using Newton led difference formula and Lag egration: Trapezoidal, Simpson	raphs and networks, compute erical methods -1 ete data in the field of comp ions - Regula-Falsi and Newto 's forward and backward diffe range's interpolation formula n's (1/3)rd and (3/8)th rules (w	r graphics.( <b>RBT Levels</b> (5L+3T) uter science & con-Raphson methods (o erence formulae, (All formulae without p	nly formulae).
Self-study: An Applications: Importance of engineering. Solution of algo Problems. Finite difference Newton's divice Numerical into Self-Study: Bi	Image processing, AI & ML, G         Module-4 Num         'numerical methods for discr         ebraic and transcendental equat         ess, Interpolation using Newton         led difference formula and Lag         egration: Trapezoidal, Simpson         section method, Lagrange's inv	raphs and networks, compute erical methods -1 ete data in the field of comp ions - Regula-Falsi and Newto 's forward and backward diffe range's interpolation formula n's (1/3)rd and (3/8)th rules (w rerse Interpolation.	r graphics.( <b>RBT Levels</b> (5L+3T) uter science & on-Raphson methods (o erence formulae, (All formulae without p vithout proof). Problems	nly formulae). proof). Problems.
Self-study: An Applications: Importance of engineering. Solution of algo Problems. Finite differenco Newton's divid Numerical into Self-Study: Bi Applications:	Image processing, AI & ML, G         Module-4 Num         numerical methods for discr         ebraic and transcendental equat         ces, Interpolation using Newton         led difference formula and Lagge         egration: Trapezoidal, Simpson         section method, Lagrange's inv         Estimating the approximate root <b>Levels: L1, L2 and L3</b> )	raphs and networks, compute erical methods -1 ete data in the field of comp ions - Regula-Falsi and Newto 's forward and backward diffe range's interpolation formula n's (1/3)rd and (3/8)th rules (w erse Interpolation. ots, extremum values, Area, vo	r graphics.( <b>RBT Levels</b> (5L+3T) <b>uter science &amp;</b> on-Raphson methods (o ference formulae, (All formulae without p vithout proof). Problems olume, and surface area.	nly formulae). proof). Problems.
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	conditions
4	
4	Computation of basis and dimension for a vector space and Graphical representation of linear transformation
5	
5	Visualization in time and frequency domain of standard functions
6	Solution of algebraic and transcendental equations by Regula-Falsi and Newton-Raphson
_	method
7	Interpolation/Extrapolation using Newton's forward and backward difference formula
8	Computation of area under the curve using Trapezoidal, Simpson's (1/3)rd and (3/8)th rule
9	Solution of ODE of first order and first degree by Taylor's series and Modified Euler's method
10	Solution of ODE of first order and first degree by Runge-Kutta 4th order and Milne's
	predictor-corrector method
	sted software's: Mathematica/MatLab/Python/Scilab
	ter End Examination (SEE):
Theory	SEE will be conducted by Institute as per the scheduled timetable, with common question
	for the course (duration 03 hours)
	he question paper will have ten questions. Each question is set for 20 marks.
	here will be 2 questions from each module. Each of the two questions under a module (with a
	naximum of 3 sub-questions), <b>should have a mix of topics</b> under that module.
	he students have to answer 5 full questions, selecting one full question from each module.
	e outcome (Course Skill Set)
	end of the course the student will be able to:
CO 1	Understand the applications of vector calculus refer to solenoidal, and irrotational vectors. Orthogonal
	curvilinear coordinates
CO 2	
CO 3	1 1 1
	transformation
CO 4	
	engineering problems.
CO 5	
	MATHEMATICA/ MATLAB /PYTHON/ SCILAB
	sted Learning Resources:
	(Title of the Book/Name of the author/Name of the publisher/Edition and Year)
Text B	
	<b>S. S. Grewal</b> : "Higher Engineering Mathematics", Khanna publishers, 44th Ed., 2021.
	<b>Kreyszig</b> : "Advanced Engineering Mathematics", John Wiley & Sons, 10th Ed., 2018.
	ference Books
	<b>7. Ramana:</b> "Higher Engineering Mathematics" McGraw-Hill Education, 11th Ed., 2017
	Srimanta Pal & Subodh C. Bhunia: "Engineering Mathematics" Oxford University Press, 3rd Ed., 2016.
	<b>I.P Bali and Manish Goyal:</b> "A textbook of Engineering Mathematics" Laxmi
	ublications, 10th Ed., 2022.
	<b>C. Ray Wylie, Louis C. Barrett:</b> "Advanced Engineering Mathematics" McGraw – Hill Book Co.,
	rk, 6th Ed., 2017. Supta C.B, Sing S.R and Mukesh Kumar: "Engineering Mathematic for Semester I and II", Mc-Graw
	<b>Supta C.B, Sing S.R and Mukesh Kumar:</b> "Engineering Mathematic for Semester I and II", Mc-Graw lucation(India) Pvt. Ltd 2015.
	I. K. Dass and Er. Rajnish Verma: "Higher Engineering Mathematics"S. Chand
	ublication, 3rd Ed., 2014.
	ames Stewart: "Calculus" Cengage Publications, 7th Ed., 2019.
	David C Lay: "Linear Algebra and its Applications", Pearson Publishers, 4th Ed., 2018.
	<b>Careth Williams:</b> "Linear Algebra with applications. Jones Bartlett Publishers Inc.6 <sup>th</sup>
	, 2017.
L.u.	9 #0177

Course Title:	Chemistry for Computer Sci	ence &Engineering strean	n
Course Code:	22CHES12/22	CIE Marks	50
Course Type (Theory/Practical/Integrated)		SEE Marks	50
	Integrated	Total Marks	100
	2:2:2:0	ExamHours	03+02
Teaching Hours/Week (L:T:P: S) <sup>1</sup>			
Total Hours of Pedagogy	40 hours Theory + 10 to12 Lab	Credits	04
	slots		
MODUL	E 1: Sensors and Energy System	ns (8hr)	
Sensors: Introduction, working principle	and applications of Conductor	netric sensors, Electrocher	nical sensors,
Thermometric sensors, and Optical sensors.	Sensors for the measurement of	dissolved oxygen (DO). El	ectrochemical
sensors for the pharmaceuticals, surfactants,			
sensors in the detection of biomolecules and	pesticides.	-	-
Energy Systems: Introduction to batteries,	construction, working and appl	ications of Lithium ion an	d Sodium ion
batteries. Quantum Dot Sensitized Solar Cel	ls (QDSSC's)- Principle, Propert	ies and Applications.	
Self-learning: Types of electrochemical sen	sor, Gas sensor - O2 sensor, Bios	sensor - Glucosesensors.	
MODULE 2: Ma	terials for Memory and Displa	y Systems (8hr)	
Memory Devices: Introduction, Basic	concepts of electronic mem	ory, History of	
organic/polymer electronic memory device			
types of organic memory devices (organic m	nolecules, polymeric materials, or	ganic- inorganic hybrid ma	terials).
Display Systems: Photoactive and electroac	tive materials, Nanomaterials and	d organic materials used in	optoelectronic
devices. Liquid crystals (LC's) - Introduct			
(LCD's). Properties and application of Orga	nic Light Emitting Diodes (OLE	D's) and Quantum Light Er	nitting Diodes
(QLED's), Lightemitting electrochemical ce			
Self-learning: Properties and functions of		e), Copper (Cu),	
Aluminium (Al), and Brominated flame retain			
MODULE 3: Corrosion and Electrode Sys	stem (8hr)		
Corrosion Chemistry: Introduction, electr	ochemical theory of corrosion,	types of corrosion-differen	tial metal and
differential aeration. Corrosion control -		d sacrificial anode metho	od. Corrosion
Penetration Rate (CPR) - Introduction and n			
Electrode System: Introduction, types of e			
applications of glass electrode. Determination			
electrode – construction, working and appli	cations of calomel electrode. Co	ncentration cell- Definition	i, construction
and Numerical problems.		~	
Analytical Techniques: Introduction, pri			cation in the
estimation of weak acid. Potentiometry; its a		on.	
Self-learning: IR and UV- Visible spectrosc	**		
MODULE 4: Polymers and Green Fuels (			
Polymers: Introduction, Molecular weight			
polymers – synthesis and conducting me		commercial applications	. Preparation,
properties, and commercial applications of g Green Fuels: Introduction, construction a		aic call advantages and	dicadvantagas
Generation of energy (green hydrogen) by el			iisauvaittages.
Self-learning: Regenerative fuel cells	actionysis of water and its advan	lages.	
MODULE 5: E-Waste Management (8hr)			
<b>E-Waste:</b> Introduction, sources of e-waste,		nd Nood of a wasta manag	amont Toxic
materials used in manufacturing electroni			
Recycling and Recovery: Different appro			
extraction, pyrometallurgical methods, direct			
environmental management of e-waste (proc			
Self-learning: Impact of heavy metals on en		····· ,,·	
	PRACTICAL MODULE		
A – Demonstration (any two) offline/virtual			
A1. Chemical Structure drawing using softw		ketch	
A2. Determination of strength of an acid in l	Pb-acid batteryA3: Synthesis of		
Iron-oxide Nanoparticles	-		
A4. Electrolysis of water			
B – Exercise (compulsorily any 4 to be cond	lucted):		
	68		

B1. Conductometric estimation of acid mixture B2. Potentiometric estimation of FAS using K2Cr2O7 B3. Determination of pKa of vinegar using pH sensor (Glass electrode) B4. Determination of rate of corrosion of mild steel by weight loss methodB5. Estimation of total hardness of water by EDTA method C – Structured Enquiry (compulsorily any 4 to be conducted): C1. Estimation of Copper present in electroplating effluent by optical sensor (colorimetry)C2. Determination of Viscosity coefficient of lubricant (Ostwald's viscometer) C3. Estimation of iron in TMT bar by diphenyl amine/external indicator method C4. Estimation of Sodium present in soil/effluent sample using flame photometry C5. Determination of Chemical Oxygen Demand (COD) of industrial waste water sample D – Open Ended Experiments (any two): D1: Evaluation of acid content in beverages by using pH sensors and simulation.D2. Construction of photovoltaic cell. D3. Design an experiment to Identify the presence of proteins in given sample. D4. Searching suitable PDB file and target for molecular docking **CO1.** Identify the terms and applications processes involved in scientific and engineering **CO2.** Explain the phenomena of chemistry to describe the methods of engineeringprocesses **CO3.** Solve for the problems in chemistry that are pertinent in engineering applications **CO4.** Apply the basic concepts of chemistry to explain the chemical properties and processes CO5. Analyze properties and multidisciplinary situations processes associated with chemical substances in Suggested Learning Resources: Books (Title of the Book/Name of the author/Name of the publisher/Edition and Year) Wiley Engineering Chemistry, Wiley India Pvt. Ltd. New Delhi, 2013- 2nd Edition. 1 2. A Text Book of Engg. Chemistry, Shashi Chawla, Dhanpat Rai & Co. (P) Ltd. 3. Essentials of Physical Chemistry, Bahl&Tuli, S.Chand Publishing 4. Applied Chemistry, Sunita Rattan, Kataria 5. Engineering Chemistry, Baskar, Wiley 5. Engineering Chemistry – I, D. Grour Krishana, Vikas Publishing 6. A Text book of Engineering Chemistry, SS Dara & Dr. SS Umare, S Chand & Company Ltd., 12<sup>th</sup> Edition, 2011. 7. A Text Book of Engineering Chemistry, R.V. Gadag and Nityananda Shetty, I. K. International Publishing house. 2<sup>nd</sup> Edition, 2016. 8. Text Book of Polymer Science, F.W. Billmeyer, John Wiley & Sons, 4<sup>th</sup> Edition, 1999. 9. Nanotechnology A Chemical Approach to Nanomaterials, G.A. Ozin & A.C. Arsenault, RSCPublishing, 2005. 10. Corrosion Engineering, M. G. Fontana, N. D. Greene, McGraw Hill Publications, New York, 3rd Edition, 1996. 11. Linden's Handbook of Batteries, Kirby W. Beard, Fifth Edition, McGraw Hill, 2019. 12. OLED Display Fundamentals and Applications, Takatoshi Tsujimura, Wiley-Blackwell, 2012 13. Supercapacitors: Materials, Systems, and Applications, Max Lu, Francois Beguin, ElzbietaFrackowiak, Wiley-VCH; 1st edition, 2013. 14. "Handbook on Electroplating with Manufacture of Electrochemicals", ASIA PACIFIC BUSINESSPRESS Inc., 2017. Dr. H. Panda, 15. Engineering Chemistry, Satyaprakash & Manisha Agrawal, Khanna Book Publishing, Delhi 16. Expanding the Vision of Sensor Materials. National Research Council 1995, Washington, DC: TheNational Academies Press. doi: 10.17226/4782. 17. Engineering Chemistry, Edited by Dr. Mahesh B and Dr. Roopashree B, Sunstar Publisher, Bengaluru, ISBN 978-93-85155-70-3, 2022 18. High Performance Metallic Materials for Cost Sensitive Applications, F. H. Froes, et al. John Wiley& Sons, 2010 19. Instrumental Methods of Analysis, Dr. K. R. Mahadik and Dr. L. Sathiyanarayanan, NiraliPrakashan, 2020 20. Principles of Instrumental Analysis, Douglas A. Skoog, F. James Holler, Stanley R. Crouch SeventhEdition, Cengage Learning, 2020 21. Polymer Science, V R Gowariker, N V Viswanathan, Jayadev, Sreedhar, Newage Int. Publishers,4th Edition, 2021 22. Engineering Chemistry, P C Jain & Monica Jain, Dhanpat Rai Publication, 2015-16<sup>th</sup> Edition. 23. Nanostructured materials and nanotechnology, Hari Singh, Nalwa, academic press, 1st Edition, 2002. 24. Nanotechnology Principles and Practices, Sulabha K Kulkarni, Capital Publishing Company, 3rd Edition2014 25. Principles of nanotechnology, Phanikumar, Scitech publications, 2<sup>nd</sup> Edition, 2010. 26. Chemistry for Engineering Students, B. S. Jai Prakash, R. Venugopal, Sivakumaraiah & PushpaIyengar., Subash Publications, 5th Edition, 2014 27. "Engineering Chemistry", O. G. Palanna, Tata McGraw Hill Education Pvt. Ltd. New Delhi, FourthReprint, 2015. 28. Chemistry of Engineering materials, Malini S, K S Anantha Raju, CBS publishers Pvt Ltd., 29. Laboratory Manual Engg. Chemistry, Anupma Rajput, Dhanpat Rai & Co.

Course Title:	COMPUTER AIDED E	NGINEERING DRAWING	
Course Code	22CED13/23	CIE Marks	50
Teaching Hour/Week (L:T:P:S)	2:0:2:0	SEE Marks	50
Total Hours of Teaching - Learning	40	Total Marks	100
Credits	03	Exam Hours	03
	Module-1		
Introduction: for CIE only			
Significance of Engineering drawing, I Scales. Introduction to Computer Aide 2D/3D environment. Selection of draw polylines, square, rectangle, polygons, chamfer, fillet and curves. <b>Orthographic Projections of Points, L</b> Introduction to Orthographic projection projections of lines (Placed in First quar Orthographic projections of planes viz tr	d Drafting software, Co-ordinate s ving sheet size and scale. Comma splines, circles, ellipse, text, mov ines and Planes: ns: Orthographic projections of p frant only). iangle, square, rectangle, pentagon,	system and reference planes HP, VH ands and creation of Lines, coordin ve, copy, off-set, mirror, rotate, trin points in 1st and 3rd quadrants. On	P, RPP & LPP ate points, axe n, extend, brea thographic
First quadrant only using change of posi			
Application on projections of Lines & I	Planes (For CIE only) Module-2		
Orthographic Projection of Solids:	Miodule-2		
Orthographic projection of right regular Cylinders, Cones, Cubes . <i>Projections of Frustum of cone and pyr</i> <b>Isometric Projections:</b> Isometric scale, Isometric projection of 1	amids (For practice only, not for C Module-3	TIE and SEE).	
projection of combination of two simple Conversion of simple isometric drawin Problems on applications of Isometric pr Introduction to drawing views using 3L	solids. <b>ngs into orthographic views</b> . rojections of simple objects / engined		neres. isometr
	Module-4		
<b>Development of Lateral Surfaces of Se</b> Development of lateral surfaces of right Development of lateral surfaces of their	regular prisms, cylinders, pyramids frustums and truncations.	and cones resting with base on HP or	nly.
	Module-5		
Multidisciplinary Applications & Prac Free hand Sketching; True free hand, Simple Mechanisms; Bicycles, Tricycle Electric Wiring and lighting diagram	Guided Free hand, Roads, Buildir es, Gear trains, Ratchets, two-wheel	er cart & Four-wheeler carts todimens	ions etc
system using suitable software <b>Basic Building Drawing;</b> Like, Archite Auto CAD or suitable software.	ctural floor plan, basic foundation d	rawing, steel structures- Frames, brid	ges,trusses usir
<b>Basic Building Drawing;</b> Like, Archite Auto CAD or suitable software, <b>Electronics Engineering Drawings-</b> Li	ke, Simple Electronics Circuit Draw	ings, practice on layers concept.	
Basic Building Drawing; Like, Archite Auto CAD or suitable software, Electronics Engineering Drawings- Li Graphs & Charts: Like, Column chart,	ke, Simple Electronics Circuit Draw	ings, practice on layers concept.	
<b>Basic Building Drawing;</b> Like, Archite Auto CAD or suitable software, <b>Electronics Engineering Drawings-</b> Li	ke, Simple Electronics Circuit Draw Pie chart, Line charts, Gantt charts,	ings, practice on layers concept.	
Basic Building Drawing; Like, Archite Auto CAD or suitable software, Electronics Engineering Drawings- Li Graphs & Charts: Like, Column chart, Course Outcomes At the end of the course the student will CO 1. Draw and communicate the object	ke, Simple Electronics Circuit Draw Pie chart, Line charts, Gantt charts, be able to: ts with definite shape and dimension	ings, practice on layers concept. etc. using Microsoft Excel or anysui	
Basic Building Drawing; Like, Archite Auto CAD or suitable software, Electronics Engineering Drawings- Li Graphs & Charts: Like, Column chart, Course Outcomes At the end of the course the student will CO 1. Draw and communicate the object CO 2. Recognize and Draw the shape ar	ke, Simple Electronics Circuit Draw Pie chart, Line charts, Gantt charts, be able to: ts with definite shape and dimension d size of objects through different v	ings, practice on layers concept. etc. using Microsoft Excel or anysui	
Basic Building Drawing; Like, Archite Auto CAD or suitable software, Electronics Engineering Drawings- Li Graphs & Charts: Like, Column chart, Course Outcomes At the end of the course the student will CO 1. Draw and communicate the object	ke, Simple Electronics Circuit Draw Pie chart, Line charts, Gantt charts, be able to: ts with definite shape and dimension d size of objects through different v e object	ings, practice on layers concept. etc. using Microsoft Excel or anysui	

Course Code			22ESC142/242	CI	E: 50
Number of Lectu	re Hours/Week	3hour	s (Theory)	SE	E: 50
Total Number of		011002	<u>40</u>		E Hours: 03
<u>1000011000101</u>		Moo	lules		Teaching Hours
		Mod	ule - I		
Introduction: Co	nventional and n	on-conventional e	nergy resources;		
			ower generation (Block Diag		8hrs
		s of Electromagn	etic Induction, Fleming's ru	les, Lenz's law, types	of
EMF and numeric	al.	Mala	-1. TT		
A C Fundament	als. Equation of		<u>ile - II</u> surrent, waveform, time perio	od fraguancy amplitud	0
			, form factor, peak factor. (		
			L, and C circuits. Concept o		
			ver. Concept of power factor		8hrs
			nections (Star & Delta) (Exc		
		Modu	le - III		
DC Machines: D	C Generator: I	Principle of opera	tion, constructional details,	induced emf expressio	n,
			nd terminal voltage. Simple		8hrs
			its significance. Torque eq	uation, types of motor	·s,
Applications of D	C motors. Simple				
			<u>lle - IV</u>		
			of operation, Types and co		
numerical. Three-		ses, variation of	losses with respect to load	i. Efficiency and simp	le 8hrs
		matic field Princ	ciple of operation, construc	tional features of moto	r
					<i>'</i> 1,
		for sin and us su	onificance simple numerical		
ijpes squittered			gnificance simple numerical 1le – V	•	
Domestic Wiring: Red	quirements, Types of	Modu wiring: casing, cappin	$\underline{\mathbf{u}} \mathbf{e} - \mathbf{V}$ In the equation of the	of load.	
<b>Domestic Wiring:</b> Red <b>Electricity Bill</b> : Powe	quirements, Types of r rating of househol	Modu wiring: casing, cappin d appliances including	<u>ule – V</u> g. Two way and three way control g air conditioners, PCs, laptops, pr	of load. inters, etc. Definition of "un	it"
Domestic Wiring: Red Electricity Bill: Powe used for consumption of Equipment Safety me	quirements, Types of er rating of househol of electrical energy, t easures: Working pri	<u>Modu</u> wiring: casing, cappin d appliances including wo-part electricity tari nciple of Fuse and Min	<b><u>ule – V</u></b> g. Two way and three way control g air conditioners, PCs, laptops, pr ff, calculation of electricity bill for niature circuit breaker (MCB), meri	of load. inters, etc. Definition of "un domestic consumers. ts and demerits.	it" 8hrs
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		Professional Writing Skills in Engli	sh	
	ubject code	22PWS16/26	Credit: (	
	lours/Week:	1 hour. (Theory)	SEE: 50 Marks	
То	tal hours: 15	CIE: 50 Marks	SEE: 1 .5hour	S
		MODULES		TeachingHours
parts of spee (Concord Ru	cch, Use of verbs and philes), Common errors in	Module-I Writing and Speaking English: Commo rasal verbs, Auxiliary verbs and their forms, Subject-verb agreement, Sequence of Tenses	Subject Verb Agreement	3 hours
in Tenses. W	ords Confused/Misused			
Introduction writing, Sen	andConclusion, Import	Module-II iting: Organizing Principles of Paragraph cance of Proper Punctuation, Precise writing Corrections activities. Misplaced modifiers, sion of words.	g and Techniques in Essay	3 hours
		Module-III		
writing, Sigr Technical Pr	nificance of Reports, Ty oposals, Characteristics	<b>ractices:</b> Technical writing process, Introdu pes of Reports. Introduction to Technical Pr of Technical Proposals. Scientific Writing P r& Sentence Improvement, Cloze Test and T	roposals Writing, Types of Process. Grammar – Voices	3 hours
		Module -IV		
Barriers, In Applications	nproving Listening Sk , Types of official/empl	<b>Employment:</b> Listening Comprehension, Typ kills. Reading Comprehension, Tips for loyment/business Letters, Resume vs. Bio D nails, Blog Writing and Memos.	effective reading. Job	3 hours
		t Workplace: Group Discussion and	Professional Interviews,	
Characteristi	cs and Strategies of a	a GD and PI's, Intra and Interpersonal	Communication Skills at	
workplace, 1	Non-Verbal Communica	ation Skills and its importance in GD and In	terview. Presentation skills	3 hours
		s, Strategies of Presentation Skills.		
6) "F	Professional Writing Sk	<b>tills in English"</b> published by Fillip Learning s per AICTE 2018 Model Curriculum) (ISBN Edition 2019].		
Reference				
11) Er 12) Te Ine	<b>nglish for Engineers</b> by echnical Communicatio dia Pvt Limited [Latest I	N.P.Sudharshana and C.Savitha, Cambridge <b>n</b> by Gajendra Singh Chauhan and Et al, (ISI Revised Edition] - 2019. <b>n</b> – Principles and Practice, Third Edition by	3N-978-93-5350-050-4), Cer	0000
0 14) Hi	xford University Press 2 igh School English Gra	1	S Chandh & Company Ltd	- 2015.
	come (Course Skill Set		,	
	of the course the studen			
CO1		tify the Common Errors in Writing and Spea	king.	
CO2		nnical writing and Presentation skills.		
CO3		osals properly and make them to Write good	technical reports.	
<b>CO4</b>	Acquire Employment a	nd Workplace communication skills.		
CO5	To learn about Techniq			

		Indian Constitution			
S	Subject code	22ICO17/27	Credit: 0	1	
ŀ	Hours/Week:	1 hour. (Theory)	SEE: 50 Marks	3	
Тс	otal hours: 15	CIE: 50 Marks SEE: 1. hours			
		MODULES	·	TeachingHours	
		Module-I			
Indian Cons	stitution: Necessity of th	e Constitution, Societies before and after	the Constitution adoption.		
Introduction	to theIndian constitution	, Making of the Constitution, Role of the Co	onstituent Assembly.	3 hours	
		Module-II			
		ation. Preamble of Indian Constitution s) and its Restriction and limitations in di		3 hours	
8		Module-III			
Directive	Principles of State	Policy (DPSP's) and its present relev	ance in Indian society.		
Fundamen	ntal Duties and its Scope	and significance in Nation, Union Execu	tive: Parliamentary System,	3 hours	
Union Ex	ecutive - President, Prim	eMinister, Union Cabinet.			
		Module -IV			
		entary Committees, Important Parliamenta			
System of I	India,Supreme Court of Ir	ndia and other Courts, Judicial Reviews and	Judicial Activism.	3 hours	
		Module-V			
		M, State Cabinet, Legislature - VS &			
		ndment to Constitution, and Important Con	stitutional Amendments till	3 hours	
	gency Provisions.				
	xt book:			· · ·	
		or Competitive Exams) - Published by N	aldhruva Edutech Learning S	Solutions,	
	ngaluru. – 2022.	titution of India", (Students Edition.) by	Durge Des Pesu (DD Pegu)	Drantica Hall	
2. 11		intution of mula, (Students Edition.) by	Durga Das Basu ( <b>DD Basu</b> )	Frenuce – Hall,	
Reference					
		ofessional Ethics and Human Rights" by S	Shubham Singles Charles F. J	Jaries andet	
		earning India, Latest Edition – 2019.	indonani Singles, Charles E. I	ianes, ander	
		" by Merunandan K B: published by Merug	u Publication. Second Edition	1.	
	ngaluru.			-,	
		tudents & Youths by Justice HN Nagamo	han Dhas, Sahayana, kerek	on.	
		n, V.S.Senthilkumar, "Engineering Ethics'			
Course ou	tcome (Course Skill Set)	)			
At the end	l of the course the student				
CO1	Analyse the basic struct	ture of Indian Constitution.			
CO2		mental Rights, DPSP's and Fundamental Du		1.	
CO3		Government, political structure & codes, pro	ocedures.		
CO4		xecutive & Elections system of India.			
CO5	Remember the Amendr	nents and Emergency Provisions, other imp	ortant provisions given by the	constitution	

(		Scientific Foundations of Healt	h	
	Subject code	22SFH18/28	Credit: 0	
H	Hours/Week:	1 hour. (Theory)	SEE: 50 Marks	5
To	otal hours: 15	CIE: 50 Marks	SEE: 1 hours	
		MODULES		TeachingHours
of Health, l family, Hea	Health beliefs, Advantage		lealth & Society, Health &	3 hours
		Module-II		
Nutritional	guidelines for good heat	<b>tter future:</b> Developing healthy diet for g lth, Obesity & overweight disorders an th, Wellness and physical function, How to	nd its management, Eating	3 hours
aisoracis, 1	thess components formear	Module-III	s avoia exercise injuries.	
Education, t	the value of relationship a tanding of basic instincts	ationships : Building communication ski and communication skills, Relationships of life (more than a biology), Changing	for Better or worsening of	3 hours
avoiding of Differences	addictions, How addiction	<b>Module -IV</b> Characteristics of health compromising on develops, Types of addictions, influe and non addictive people & their behavior	ncing factors of addictions,	3 hours
15, 110 W (C	recovery from addictions	Module-V		
Preventing	& fighting against dis	seases for good health: How to prote	ct from different types of	
infections, Managemen	t of chronic illness for Q	good health, Reducing risks & copin Quality of life, Health & Wellness of youth	g with chronic conditions,	3 hours
infections, Managemen	t of chronic illness for Q suring of health & wealth s	good health, Reducing risks & copin Quality of life, Health & Wellness of youth	g with chronic conditions,	3 hours
infections, Managemen <u>future, Meas</u> <b>Text book</b> <b>7.</b> "Y	at of chronic illness for Q suring of health & wealth s c: Scientific Foundations of iniversity Website.	good health, Reducing risks & copin Quality of life, Health & Wellness of youth Status. f Health" – Study Material Prepared by	g with chronic conditions, n :a challenge for upcoming v <b>Dr. L Thimmesha, Publish</b>	ed in VTU-
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Sem	ester (Elect	ronics and Co	mmunication Engineering &	EIE)						(Chemistr	y Grou	ıр)	
			Course	æ		ching ırs/We	ek			Examin	ation		
Sl. No	Course and Course Co		Title	TD/PSB	The orv Tutorial		Practica	SDA	Duration in	CIEMar ks	CTEMar ks SEEMarks TotalM		
					L	Т	Р	S				Total arks	
1	ASC(IC)	22MATE11	Mathematics for EEE Stream-I	Maths	2	2	2	0	03	50	50	100	04
2	ASC(IC)	22CHEE12	Chemistry for EEE Stream	Chemistry	2	2	2	0	03	50	50	100	04
3	ESC	22CED13	Computer-Aided Engineering Drawing	Respective Dept.	2	0	2	0	03	50	50	100	03
4	ESC-I	22ESC145	8 8	Respective EnggDept	3	0	0	0	03	50	50	100	03
5	ETC-I	22ETC15X	Emerging Technology Courses	Any dept	3	0	0	0	03	50	50	100	03
6	AEC	22ENG16	Communicative English	Humanities	1	0	0	0	1.5	50	50	100	01
7	HSMS	22ICO17/27	Indian Constitution	Humanities	1	0	0	0	01	50	50	100	01
8	HSMS	22SFH18	Scientific Foundations of Health	AnyDept	1	0	0	0	01	50	50	100	0
		•	·	TOTAL						400	400	800	20

			D.A College of Engineering Kal Scheme of Teaching an	d Examinations-202	2								
			BE) and Choice Based Credit S		ive f	rom	the a	icade	mic ye	ear 20	22-23)	)	
II Seme	ster (Electronics ar	d Communication Engine	eering) & EIE	(Physics Group)	T 1	T	Iours/W		Exami				
SI. No	Course and Cour	se Code	Course Tile	TD/PSB	Theory Lecture	Tutorial	Practical/ Drawing	VQS	Duration in hours	CIE Marks	SEE Marks	Total Marks	Credits
-					L	Т	P	s	_		50	100	
I	ASC(IC)	22MATC21	Mathematics for EEE stream-II	Maths	2	2	2	0	03	50	50	100	04
2	ASC(IC)	22PHYE22	Physics for EEE Stream	PHY	2	2	2	0	03	50	50	100	04
3	ESC	22BEE13	Introduction to Electronics engineering	Electric Engg. Dept.	2	2	0	0	03	50	50	100	03
4	ESC-I	22ESC244	Introduction to Mechanical Engineering	Respective Engg dept	3	0	0	0	03	50	50	100	03
5.	PLC-I	22PLC25X	Programming Language Courses- I&II		2	0	2	0	03	50	50	100	03
6	AEC	22PWS26	Professional Writing Skills in English	Humanities	1	0	0	0	1.5	50	50	100	01
7	HSMC	22KSK27/ 22KBK27	Samskrutika Kannada/ Balake Kannada	Humanities	1	0	0	0	1.5	50	50	100	01
8	AEC/SDC	22IDT28	Innovation and Design Thinking	Any Dept	1	0	0	0	01	50	50	100	01
		I	ł	TOTAL		1				400	400	800	20

	athematics-I for Electrical			
		Based Credit System (CBC the academic year 2022-23		
Course		22MATE11	CIE Marks	50
Credit		04	SEE Marks	50
			SEE MAIKS	50
Course	t Hours/Week (L-T-P)	Integrated 2-2-2	Total Marks	100
Contac	t Hours of Pedagogy	42 hours Theory +10 Lab slots	Exam Hours	03
ntuaduation to no	Module-1 C		(5L+3T)	
	<b>ar coordinates and curvat</b> s, Polar curves, angle betwee			en two curves
	rvature and Radius of curva			
Problems.			, 1 0141 410 1 0041 1011101	5p.e
Self-study: Center a	and circle of curvature, evolution	utes and involutes.		
	munication signals, Manufa	cturing of microphones, and	d Image processing.	
RBT Levels: L1, I				
		xpansion and Multivariab		· ·
	ies expansion and partial of laurin's series expansion for			applications.
	: L-Hospital's rule, probler		iny) – problems.	
	on, total derivative - differer		ons. Jacobian and	
	and minima for a function of			
	theorem and problems. Met			gle constraint.
Applications: Serie	s expansion in communicati	on signals, Errors and appro	oximations.	-
RBT Levels: L1, I				
	Module-3 Ordinary Differ		(6L+3T)	
	st-order ordinary different	tial equations pertaining to	o the applications for	
	i's differential equations. Ex	xact and reducible to exact of	differential equations -Int	tegrating factor
$1 \left( \partial M  \partial N \right)$	1 $(\partial N \partial M)$			
$\int \frac{\partial y}{\partial y} = \frac{\partial y}{\partial x}$	$\frac{1}{M} = \frac{1}{M} \left( \frac{\partial N}{\partial x} - \frac{\partial M}{\partial y} \right)$			
	ies, L-R and C-R circuits.Pi			
	er-order ordinary differen			ns.
-	ODEs with constant coeffic	ients - Inverse differential o	operator, method of	
variation of parame			17 1 1 1 1	
self-Study: Application	tions of ODEs in EC&EE E	ingineering field. Cauchy's	and Legendre's homoger	neous
	is - Problems. linary differential equation	ns. Rate of Growth or Deca	v (RRT Levels, I 1 I 2	and I 3)
sppications of ore	Module-4 Integra		(6L+3T)	and LS)
Introduction to Inf	egral Calculus in EC&EE		· · · ·	
	Evaluation of double and tr			
	ntegration, changing into po	1 0	ē :	
Volume by double i		11		
	unctions: Definitions, prop		a and Gamma functions.	Problems.
	e by triple integration, Cente			
Annlications: Ante	nna and wave propagation, (	Calculation of optimum pov	wer in electrical	
circuits, field theory				
circuits, field theory		and Alash-s	(ET . 300)	
circuits, field theory ( <b>RBT Levels: L1, I</b>	Module-5 Lin		(5L+3T)	
circuits, field theory (RBT Levels: L1, I Introduction of lin	Module-5 Lir ear algebra related to EC&	&EE Engineering applicat	ions.	em of linear
<b>ITTUITS, field theory</b> <b>RBT Levels: L1, I</b> <b>INTTODUCTION OF LIN</b> Elementary row	<b>Module-5 Lin</b> ear algebra related to EC& transformation of a matrix, l	<b>&amp;EE Engineering applicat</b> Rank of a matrix. Consisten	<b>ions.</b> cy and solution of a syste	
<b>RBT Levels: L1, I</b> <b>(ntroduction of lin</b> Elementary row equations - Gauss-e	<b>Module-5 Lin</b> ear algebra related to EC& transformation of a matrix, l imination method, Gauss-Jo	<b>EE Engineering applicat</b> Rank of a matrix. Consisten ordan method and approxim	ions. cy and solution of a systenate solution by Gauss-Se	eidel method.
Errcuits, field theory <b>RBT Levels: L1, I</b> <b>Introduction of lin</b> Elementary row equations - Gauss-e Eigen values and Ei	<b>Module-5 Lin</b> ear algebra related to EC& transformation of a matrix, l	<b>EE Engineering applicat</b> Rank of a matrix. Consisten ordan method and approxim er method to find the domin	ions. icy and solution of a syste- nate solution by Gauss-Se nant Eigen value and Eige	eidel method. envector.

Applic	cations of Linear Algebra: Network Analysis, Critical point of a network system. Optimum solution.
	Levels: L1, L2 and L3)
	f Laboratory experiments (2 hours/week per batch/ batch strength 15)
	sessions + 1 repetition class + 1 Lab Assessment
1	2D plots for Cartesian and polar curves
2	Finding angle between polar curves, curvature and radius of curvature of a given curve
3	Finding partial derivatives, Jacobian and plotting the graph
4	Applications to Maxima and Minima of two variables
5	Solution of first-order differential equation and plotting the graphs / Solutions of Second-order ordinary
	differential equations with initial/boundaryconditions
6	Program to compute surface area, volume and centre of gravity
7	Evaluation of improper integrals
8	Numerical solution of system of linear equations, test for consistency and graphical
	representation
9	Solution of system of linear equations using Gauss-Seidel iteration
10	Compute eigen values and eigenvectors and find the largest and smallest eigen value by
	Rayleigh power method
Sugge	sted software's: Mathematica/MatLab/Python/Scilab
	ter End Examination (SEE):
	y SEE will be conducted by Institute as per the scheduled timetable, with common question
	for the course (duration 03 hours)
	The question paper will have ten questions. Each question is set for 20 marks.
	There will be 2 questions from each module. Each of the two questions under a module (with a
	naximum of 3 sub-questions), should have a mix of topics under that module.
	The students have to answer 5 full questions, selecting one full question from each module.
	e outcome (Course Skill Set)
At the	end of the course the student will be able to:
CO 1	
CO 2	
	functions
CO 3	, , , ,
CO 4	
CO 5	
	eigen values and eigen vectors. Familiarize with modern mathematical tools namely
	MATHEMATICA/ MATLAB/ PYTHON/SCILAB
	sted Learning Resources:
	(Title of the Book/Name of the author/Name of the publisher/Edition and Year)
Text E	
	<b>B. S. Grewal</b> : "Higher Engineering Mathematics", Khanna publishers, 44th Ed., 2021.
	E. Kreyszig: "Advanced Engineering Mathematics", John Wiley & Sons, 10th Ed., 2018.
	ence Books
	V. Ramana: "Higher Engineering Mathematics" McGraw-Hill Education, 11th Ed., 2017
	Srimanta Pal & Subodh C. Bhunia: "Engineering Mathematics" Oxford University Press,3rd Ed.,
2016.	
	N.P Bali and Manish Goyal: "A textbook of Engineering Mathematics" Laxmi
	ublications, 10th Ed., 2022.
	C. Ray Wylie, Louis C. Barrett: "Advanced Engineering Mathematics" McGraw – Hill Book Co.,
	ork, 6th Ed., 2017.
	Gupta C.B, Sing S.R and Mukesh Kumar: "Engineering Mathematic for Semester I and II", Mc-Graw
	ducation(India) Pvt. Ltd 2015.
	H. K. Dass and Er. Rajnish Verma: "Higher Engineering Mathematics" S. Chand
	Publication, 3rd Ed., 2014.
	ames Stewart: "Calculus" Cengage Publications, 7th Ed., 2019.
	David C Lay: "Linear Algebra and its Applications", Pearson Publishers, 4th Ed., 2018.
	Gareth Williams: "Linear Algebra with applications", Jones Bartlett Publishers Inc., 6th
Ed	., 2017.

Course Title:	Chemistry for Electrical and Elect	ronicsEngineering s	tream
Course Code:	22CHEE12/22	CIE Marks	50
Course Type		SEE Marks	50
(Theory/Practical/Integrated)	Integrated		
(Theory/Tractical/Integrated)	Integrated	Total	100
1	2.2.2.0	Marks	02+02
Teaching Hours/Week (L:T:P: S) <sup>1</sup>	2:2:2:0	ExamHours	03+02
Total Hours of Pedagogy MODULE 1: Chemistry of Polymer	40 hours Theory + 10to12 Lab slots s and Electronic Materials (8hr)	Credits	04
<b>Polymers</b> : Introduction, types of polymer addition polymerization, molecular weig properties and industrial applications of po <b>Conducting polymers</b> – synthesis and con <b>Fibers:</b> Introduction, synthesis, properties <b>Plastics:</b> Introduction, synthesis, properties <b>Teflon.</b> <b>Self-learning:</b> Biodegradable polymer: In	rization, free radical mechanism of addi ht; number average and weight average olyvinylchloride (PVC) and polystyrene. nducting mechanism of Polyacetylene and industrial applications of Kevlar and ies and industrial applications of poly(n troduction, synthesis, properties and appl <b>proversion and Storage (8hr)</b> batteries. Components, construction, we solid state battery (Li-polymer battery) an orking and applications of methanol–ox l cell. value, determination of calorific value u e double layer capacitors, pseudo capacit <b>waste Management (8hr)</b> ctrochemical theory of corrosion, types galvanization, anodization and sacrificia	e, numerical problem l Polyester. hethyl methacrylate) ications of polylactic orking and application d Li-ion battery. ygen and sing bombcalorimeter tors, and of corrosion-different al anode method. Fac	ns. Synthesis, (PMMA) and acid (PLA). ons of modern er, numerical tial metal and
E-waste Management: Introduction, sou of disposal, advantages of recycling. Extra PCB: Electroless plating – Introduction, I Self-learning: Recycling of PCB and batt Module-4: Water technology and Nano	arces, types, effects of e-waste on environ action of gold from E-waste. Electroless plating of copper in the manuf erry components	nment and human he	ealth, methods
Water technology: Introduction, source temporary, permanent and total hardness Process, determination of COD, numeric methods. Nanotechnology: Introduction, properties nanomaterials for water treatment(metal o Self-learning: Introduction, classification. MODULE 5: Electrode System in Analy	by EDTA method, numerical problems, al problems. Purification of water by and engineering application of carbon na xide). , properties and application of silicon carb /tical Techniques (8hr)	softening of water Reverse osmosis an notubes, graphene ar pide.	by Lime-Soda d chlorination id
Electrode System: Introduction, types of applications of glass electrode. Determina electrode – construction, working and app and Numerical problems. Analytical Techniques: Introduction, pr estimation of copper, Potentiometric sens application in the estimation of weak acid. Self-learning: IR and UV- Visible spectro	electrodes. Ion selective electrode – de tion of pH using glass electrode. Reference plications of calomel electrode. Concentra- inciple and instrumentation of Colorime sors; its application in the estimation of pscopy.	ce electrode - Introdu ation cell – Definition etric sensors; its app	ction, calomel n, construction lication in the
<ul> <li>A – Demonstration (any two) offline/virtue</li> <li>A1. Synthesis of polyurethane</li> <li>A2. Determination of strength of an acid in iron oxide nanoparticles</li> <li>A4. Electroplating of copper on metallic of <i>B</i> – <i>Exercise (compulsorily any 4 to be co</i></li> <li>B1.Conductometric estimation of acid mix</li> </ul>	n Pb-acid batteryA3. Synthesis of bjects <i>nducted):</i>		

B2. Potentiometric estimation of FAS using K2Cr2O7
B3. Determination of pKa of vinegar using pH sensor (Glass electrode)
B4. Determination of rate of corrosion of mild steel by weight loss methodB5. Estimation of total hardness
of water by EDTA method
C – Structured Enquiry (compulsorily any 4 to be conducted):
C1. Estimation of Copper present in electroplating effluent by optical sensor (colorimetry)C2. Determination of
Viscosity coefficient of lubricant (Ostwald's viscometer)
C3. Estimation of iron in TMT bar by diphenyl amine/external indicator method C4. Estimation of Sodium
present in soil/effluent sample using flame photometry
C5. Determination of Chemical Oxygen Demand(COD) of industrial waste water sample
D – Open Ended Experiments (any two):
D1. Estimation of metal in e-waste by optical sensorsD2. Electroless
plating of Nickle on Copper
D3. Determination of glucose by electrochemical sensors
D4. Synthesis of polyaniline and its conductivity measurement
<b>CO1.</b> Identify the terms and applications processes involved in scientific and engineering
CO2. Explain the phenomena of chemistry to describe the methods of engineering
processes
<b>CO3.</b> Solve for the problems in chemistry that are pertinent in engineering applications
<b>CO4.</b> Apply the basic concepts of chemistry to explain the chemical properties and processes
<b>CO5.</b> Analyze properties and multidisciplinary situations processes associated with chemical substances in
Suggested Learning Resources:
Books (Title of the Book/Name of the author/Name of the publisher/Edition and Year)
1. Wiley Engineering Chemistry, Wiley India Pvt. Ltd. New Delhi, 2013- 2 <sup>nd</sup> Edition.
2. Engineering Chemistry, Satyaprakash& Manisha Agrawal, Khanna Book Publishing, Delhi
3. A Text Book of Engg. Chemistry, Shashi Chawla, Dhanpat Rai & Co. (P) Ltd.
4. Essentials of Physical Chemistry, Bahl&Tuli, S.Chand Publishing
5. Applied Chemistry, Sunita Rattan, Kataria 5. Engineering Chemistry, Baskar, Wiley
6. Engineering Chemistry – I, D. GrourKrishana, Vikas Publishing
7. A Text book of Engineering Chemistry, SS Dara & Dr. SS Umare, S Chand & Company Ltd.,12 <sup>th</sup> Edition, 2011.
8. A Text Book of Engineering Chemistry, R.V. Gadag and Nityananda Shetty, I. K. International Publishing house. 2 <sup>nd</sup> Edition, 2016.
9. Text Book of Polymer Science, F.W. Billmeyer, John Wiley & Sons, 4 <sup>th</sup> Edition, 1999.
10. Nanotechnology A Chemical Approach to Nanomaterials, G.A. Ozin& A.C. Arsenault, RSCPublishing, 2005.
11. Corrosion Engineering, M. G. Fontana, N. D. Greene, McGraw Hill Publications, New York, 3 <sup>rd</sup> Edition, 1996.
12. Linden's Handbook of Batteries, Kirby W. Beard, Fifth Edition, McGraw Hill, 2019.
13. OLED Display Fundamentals and Applications, TakatoshiTsujimura, Wiley-Blackwell, 2012
14.         Supercapacitors:         Materials,         Systems,         and         Applications,         Max         Lu,         Francois         Beguin,           ElzbietaFrackowiak, Wiley-VCH;         1st edition, 2013.         2013.         2013.         2013.         2013.         2013.         2013.         2013.         2013.         2013.         2013.         2013.         2013.         2013.         2013.         2013.         2013.         2013.         2013.         2013.         2013.         2013.         2013.         2013.         2013.         2013.         2013.         2013.         2013.         2013.         2013.         2013.         2013.         2013.         2013.         2013.         2013.         2013.         2013.         2013.         2013.         2013.         2013.         2013.         2013.         2013.         2013.         2013.         2013.         2013.         2013.         2013.         2013.         2013.         2013.         2013.         2013.         2013.         2013.         2013.         2013.         2013.         2013.         2013.         2013.         2013.         2013.         2013.         2013.         2013.         2013.         2013.         2013.         2013.
15. "Handbook on Electroplating with Manufacture of Electrochemicals", ASIA PACIFIC BUSINESSPRESS Inc., 2017. Dr. H. Panda,
16. Expanding the Vision of Sensor Materials. National Research Council 1995, Washington, DC: TheNational Academies Press. doi: 10.17226/4782.
17. Engineering Chemistry, Edited by Dr. Mahesh B and Dr. Roopashree B, Sunstar Publisher, Bengaluru, ISBN 978-93-85155-70-3, 2022
18. High Performance Metallic Materials for Cost Sensitive Applications, F. H. Froes, et al. John Wiley& Sons, 2010
19. Instrumental Methods of Analysis, Dr. K. R. Mahadik and Dr. L. Sathiyanarayanan, NiraliPrakashan, 2020
20. Principles of Instrumental Analysis, Douglas A. Skoog, F. James Holler, Stanley R. Crouch SeventhEdition, Cengage Learning, 2020
21. Polymer Science, V R Gowariker, N V Viswanathan, Jayadev, Sreedhar, Newage Int. Publishers,4th Edition, 2021
22. Engineering Chemistry, P C Jain & Monica Jain, Dhanpat Rai Publication, 2015-16 <sup>th</sup> Edition.
23. Nanostructured materials and nanotechnology, Hari Singh, Nalwa, academic press, 1 <sup>st</sup> Edition,2002.
24. Nanotechnology Principles and Practices, Sulabha K Kulkarni, Capital Publishing Company, 3 <sup>rd</sup> Edition 2014
25. Principles of nanotechnology, Phanikumar, Scitech publications, 2 <sup>nd</sup> Edition, 2010.
26. Chemistry for Engineering Students, B. S. Jai Prakash, R. Venugopal, Sivakumaraiah& PushpaIyengar., Subash Publications, 5 <sup>th</sup> Edition, 2014
27. "Engineering Chemistry", O. G. Palanna, Tata McGraw Hill Education Pvt. Ltd. New Delhi, FourthReprint, 2015.
28. Chemistry of Engineering materials, Malini S, K S Anantha Raju, CBS publishers Pvt Ltd., Laboratory Manual Engg. Chemistry, Anupma Rajput, Dhanpat Rai & Co.

Course Title:	COMPUTER AIDED ENGINEERING DRAWING					
Course Code	22CED13/23	CIE Marks	50			
Teaching Hour/Week (L:T:P:S)	2:0:2:0	SEE Marks	50			
Total Hours of Teaching - Learning	40	Total Marks	100			
Credits	03 Exam Hours		03			
Module-1						

#### Introduction: for CIE only

Significance of Engineering drawing, BIS Conventions of Engineering Drawing, Free hand sketching of engineering drawing, Scales. Introduction to Computer Aided Drafting software, Co-ordinate system and reference planes HP, VP, RPP & LPP of 2D/3D environment. Selection of drawing sheet size and scale. Commands and creation of Lines, coordinate points, axes, polylines, square, rectangle, polygons, splines, circles, ellipse, text, move, copy, off-set, mirror, rotate, trim, extend, break, chamfer, fillet and curves.

#### **Orthographic Projections of Points, Lines and Planes:**

Introduction to Orthographic projections: Orthographic projections of points in 1st and 3rd quadrants. Orthographic projections of lines (Placed in First quadrant only).

Orthographic projections of planes viz triangle, square, rectangle, pentagon, hexagon, and circular laminae (Placed in

First quadrant only using change of position method).

Application on projections of Lines & Planes (For CIE only)

Module-2

#### **Orthographic Projection of Solids:**

Orthographic projection of right regular solids (Solids Resting on HP only): Prisms & Pyramids (square, pentagon, hexagon), Cylinders, Cones, Cubes.

Projections of Frustum of cone and pyramids (For practice only, not for CIE and SEE).

#### Module-3

#### **Isometric Projections:**

Isometric scale, Isometric projection of hexahedron (cube), right regular prisms, pyramids, cylinders, cones and spheres. Isometric projection of combination of two simple solids.

#### Conversion of simple isometric drawings into orthographic views.

Problems on applications of Isometric projections of simple objects / engineering components.

Introduction to drawing views using 3D environment (For CIE only).

#### Module-4

#### **Development of Lateral Surfaces of Solids:**

Development of lateral surfaces of right regular prisms, cylinders, pyramids and cones resting with base on HP only. Development of lateral surfaces of their frustums and truncations.

Module-5

#### Multidisciplinary Applications & Practice (For CIE Only):

Free hand Sketching; True free hand, Guided Free hand, Roads, Buildings, Utensils, Hand tools & Furniture's etc Drawing Simple Mechanisms; Bicycles, Tricycles, Gear trains, Ratchets, two-wheeler cart & Four-wheeler carts todimensions etc Electric Wiring and lighting diagrams; Like, Automatic fire alarm, Call bell system, UPS system, Basic power distribution system using suitable software

Basic Building Drawing; Like, Architectural floor plan, basic foundation drawing, steel structures- Frames, bridges, trusses using Auto CAD or suitable software,

Electronics Engineering Drawings- Like, Simple Electronics Circuit Drawings, practice on layers concept.

Graphs & Charts: Like, Column chart, Pie chart, Line charts, Gantt charts, etc. using Microsoft Excel or any suitable software. **Course Outcomes** 

At the end of the course the student will be able to:

**CO 1.** Draw and communicate the objects with definite shape and dimensions

**CO 2.** Recognize and Draw the shape and size of objects through different views

CO 3. Develop the lateral surfaces of the object

CO 4. Create a Drawing views using CAD software.

CO 5. Identify the interdisciplinary engineering components or systems through its graphical representation.

	itle:	Introduction to C Pr	ogrammin <u>g</u>	
Course Co	de:	22ESC145/245	CIE Marks	50
Course Typ	pe (Theory/Practical	Integrated	SEE Marks	50
/Integrated )			Total Marks	100
Teaching I	Hours/Week (L:T:P: S)	2:0:2:0	Exam Hours	03
Total Hour	rs of Pedagogy	40 hours	Credits	03
	Μ	ODULES		TeachingHours
Executing a <b>Operators a</b> operators, as special oper	N Flowcharts, Introduction to C: A "C" program, Constants, Variables ar and Expressions, Managing Input/ C ssignment operators, increment/ decre rators. Evaluation of expression, pr operator precedence and associativity.	nd Data types. Dutput: Arithmetic operators ment operators, conditional c ecedence of arithmetic ope	relational operators, logical operators, bit wise operators, erators, type conversions in	8 hours
<b>Decision m</b> anested if st Statements.	Module-II aking and branching: Decision Mal atements, the else if ladder, Switc aking and Looping: While stateme	king with if statement, Simp h statement, The? : opera	le if statement, the if else , ator, Unconditional control	8 hours
Initialization Strings: De	<b>Module-III</b> ne dimensional Array, declaration, n, examples and exercises. claring and Initializing String Varial hmetic Operations on Characters, String	bles, Reading Strings from T	Cerminal, Writing strings to	8 hours
User-defined declaration, <b>Structures</b> : Members, S	Module -IV and Recursion : Need for User-def d Functions, Definition of functions, T Category of functions, Recursion, ex- and Unions: Defining a Structures, I tructure Initialization, Copying and c ray of structuresUnions: Union, Size	Return value and their type amples and exercises. Declaration of Structure varia omparing structure variables	s, Function calls, Function ables, Accessing Structure , operations on individual	8 hours
variables, In Examples & File Manag	troduction, Understanding pointers, itializing of pointer variables, accessi	ng a variable through its poi e, closing file, input, outpu	nter, pointer expressions,	8 hours
Text book			n Private Limited-VEdition	2016
Reference	e books:	· <b>x</b>	·	
<ul> <li>5. Yashwa</li> <li>6. Brian Y Second</li> <li>7. Behrou Third e</li> <li>Course out At the end</li> <li>CO1</li> </ul>	ant P. Kanetakar, "Let us C", Fifth Edi W Kernighan & Dennis M Ritchie Edition, 2004. z A.Forouzan and Richard F.Gilberg, <u>dition, Thomson Learning, 2005.</u> <b>tcome (Course Skill Set)</b> of the course the student will be able Develop Algorithm and flowcharts a	" The C Programn Computer Program: A structu to: nd understand the different d	5. ning Language", Prentice Hall ured programmingApproach U ata typesand Operators in C la	Jsing C.",
<ul> <li>5. Yashwa</li> <li>6. Brian Y Second</li> <li>7. Behrou Third e</li> <li>Course out At the end</li> <li>CO1</li> <li>CO2</li> <li>CO3</li> </ul>	ant P. Kanetakar, "Let us C", Fifth Edi W Kernighan & Dennis M Ritchie Edition, 2004. z A.Forouzan and Richard F.Gilberg, dition, Thomson Learning, 2005. <b>tcome (Course Skill Set)</b> of the course the student will be able Develop Algorithm and flowcharts a Identify and use proper decision /con Apply arrays and Strings fu	tion, BPB Publications, 2016 "The C Programn "Computer Program: A structu to: nd understand the different da trol constructs for solving dir n c t i o n s t o develop pr	5. hing Language", Prentice Hall ured programmingApproach U ata typesand Operators in C la fferenttype of problems ograms for a given problem.	Jsing C.",
<ul> <li>5. Yashwa</li> <li>6. Brian Y Second</li> <li>7. Behrou Third e</li> <li>Course out At the end</li> <li>CO1</li> <li>CO2</li> </ul>	ant P. Kanetakar, "Let us C", Fifth Edi W Kernighan & Dennis M Ritchie Edition, 2004. z A.Forouzan and Richard F.Gilberg, dition, Thomson Learning, 2005. tcome (Course Skill Set) of the course the student will be able Develop Algorithm and flowcharts a Identify and use proper decision /con	tion, BPB Publications, 2016 "The C Programn "Computer Program: A structu to: nd understand the different da introl constructs for solving dif n c t i o n s t o develop pu l apply modular programming	5. hing Language", Prentice Hall ured programmingApproach U ata typesand Operators in C la fferenttype of problems ograms for a given problem. g concepts	Jsing C.",

Practice Programs:
1.Write a C program using printf statement:
a) Print your name and Address.
b) Print the pattern:
+
+ +
+ + +
+ +
+
2.Write a C Program using Scanf statements
a) Read int, char and float values from the keyboard and display the same.
3.Write a c program to find :
i) Area of rectangle
ii) Area of Square
iii) Area of circle
4. Write a c program using if, ifelse, nested if and elseif ladder.
i) To find whether number is odd or even.
ii) To find whether number is +ve or -ve.
iii) To find largest of two numbers.
iv) To find largest of three numbers.
5. Write a c program using while , do-while and for looping statement.
i) Print 1 to 10 numbers using all the three looping statements.
6. Write a c program using arrays:
i) Read 1 to 10 array elements and display the same.
ii) Read float elements and display the same.
iii) Read character and display the same.
7. Write c program using strings:
i. Read a string from keyboard and display the same.
<b>Programming Assignments:</b> 21. C. Decorrent to find Machanical Energy of a particle using $E = mah + 1/2 mu^2$
21. C Program to find Mechanical Energy of a particle using $E = mgh+1/2 mv^2$ .
<ul><li>22. C Program to convert Kilometers into Meters and Centimeters.</li><li>23. C Program To Check the Given Character is Lowercase or Uppercase or Special Character.</li></ul>
24. Program to balance the given Chemical Equation values x, y, p, q of a simple chemical equation of the type: The task is
to find the values of constants b1, b2, b3 such that the equation is balanced on both sides and it must be the reduced
form. 25 Implement Matrix multiplication and validate the rules of multiplication
25. Implement Matrix multiplication and validate the rules of multiplication. 26. Compute $\frac{\sin(x)}{\cos(x)}$ using Taylor series approximation. Compare you result with the built-in library function. Print
26. Compute sin(x)/cos(x) using Taylor series approximation. Compare you result with the built-in library function. Print both the results with appropriate inferences.
27. Sort the given set of N numbers using Bubblesort.
28. Write functions to implement string operations such as compare, concatenate, string length. Convince the parameter
passing techniques.
<ul><li>29. Implement structures to read, write and compute average-marks and the students scoring above and below the average marks for a class of N students.</li></ul>
D. Develop a program using pointers to compute the sum, mean and standard deviation of all elements stored in an array of
real numbers

		Communicative English		
Sub	ect code	22ENG16	Credit: 0	1
	rs/Week:	1 hour. (Theory)	SEE: 50 Marks	
Total	hours: 15	CIE: 50 Marks	SEE: 1.5 hour	
		MODULES		TeachingHours
English, Proces levels in Comm		<b>Module-I</b> aglish : Communicative English, Fundan Barriers to Effective Communicative Engunication Skills.		3 hours
consonants and Accent, Stress S	vowels, Sounds Mispro Shift and	<b>Module-II</b> e Transcription, English Pronunciation, Pr nounced, Silent and Non silent Letters, Syl often Misspelt. Common Errors in Pronunci	lables and Structure. Word	3 hours
Basic English Grammar and Parts of Speech	Communicative Gr	Module-III ammar and Vocabulary PART - I : on. Question Tags, One Word Substitutes, Types of Vocabulary – Exercises on it.	Grammar: Basic English	3 hours
Suffixes, Contractions ar	d Abbreviations. Word	Module -IV nmar and Vocabulary PART - II:Word I Pairs (Minimal Pairs) – Exercises, Tense nses) and Exercises on it.		3 hours
Difference betw (MTI), Various Neutralization of	ween Extempore/Public Techniques for of Mother Tongue Influ	Module-V yment :Information Transfer:Oral Press Speaking, Communication Guidelines. ence. Reading and Listening Comprehension, classification, properties and applied	Mother Tongue Influence	3 hours
Text book: 7) Com 8) A Te Learn Reference bo	xtbook of English Lan hing Solutions, Bengalu boks:		8-81-955465-2-7), Published	by Infinite
India 17. <b>Engl</b> 18. <b>Engl</b> [Late 19. <b>A Co</b>	Pvt Limited [Latest Re ish for Engineers by N ish Language Commu st Revised Edition] – (1 urse in Technical Eng	by Gajendra Singh Chauhan and Et al, (IS vised Edition] - 2019. .P.Sudharshana and C.Savitha, Cambridge <b>nication Skills – Lab Manual cum Work</b> SBN-978-93-86668-45-5), 2019. <b>lish – D Praveen Sam, KN Shoba,</b> Cambr Michael Swan, Oxford University Press – 2	University Press – 2018. book, Cengage learning Ind idge University Press – 2020	ia Pvt Limited
	me (Course Skill Set)			
		tive English (22ENG16) the student will be	e able to:	
		e Fundamentals of Communication Skills in		
		phonetics, intonation and enhance pronunc		
		grammar and essentials of language skills as		
	¥ ¥	pes of English vocabulary and language pro	* * *	
	•	Information Transfer through presentation	•	

		Indian Constitution			
S	ubject code	22ICO17/27	Credit: 0	)1	
Н	Iours/Week:	1 hour. (Theory)	SEE: 50 Marks		
То	otal hours: 15	CIE: 50 Marks	SEE: 1 hours		
MODULES			TeachingHour		
		Module-I			
Indian Cons	stitution: Necessity of	the Constitution, Societies before and after	the Constitution adoption.		
Introduction	to theIndian constitution	on, Making of the Constitution, Role of the Con	nstituent Assembly.	3 hours	
		Module-II			
		itution. Preamble of Indian Constitution			
Preamble. F	Fundamental Rights (FF	R's) and its Restriction and limitations in diff	ferent Complex Situations.	3 hours	
building.					
		Module-III			
		Policy (DPSP's) and its present releva			
		pe and significance in Nation, Union Executi	ve: Parliamentary System,	3 hours	
Union Exe	ecutive – President, Pri	meMinister, Union Cabinet.			
		Module -IV			
		nentary Committees, Important Parliamentar			
System of India, Supreme Court of India and other Courts, Judicial Reviews and Judicial Activism.				3 hours	
~ -		Module-V			
State Executive and Governor, CM, State Cabinet, Legislature - VS & VP, Election Commission, Elections & Electoral Process. Amendment to Constitution, and Important Constitutional Amendments till					
		endment to Constitution, and Important Const	titutional Amendments till	3 hours	
	gency Provisions.				
Text book 5. "Cons		(for Competitive Exams) - Published by	Neidhmuus Edutach Las	mina Colutions	
	luru. – 2022.	(Ior Competitive Exams) - Published by	Naidhruva Edutech Lea	rning Solutions,	
U		titution of India", (Students Edition.) by D	urga Das Basu (DD Basu	). Prantice Hall	
2008.	duction to the Const	indian of mula, (Students Edition.) by D	urga Das Dasu ( <b>DD Dasu</b>	). I tentice –I fail,	
Reference	books				
		Professional Ethics and Human Rights" by	Shubham Singles Charles F	Haries andet	
		E Learning India, Latest Edition – 2019.	Shubhan Shigles, Charles I	. marco, and et	
		<b>Idia</b> " by Merunandan K B: published by Mer	ugu Publication Second Ed	lition	
	engaluru.	ina by Merunandan K.D. published by Mer	ugu i ubheanon, becond Ed	introll,	
	0	r Students & Youths by Justice HN Nagamo	han Dhas Sahayana ker	ekon	
		ajan, V.S.Senthilkumar, "Engineering Ethics"		ckon.	
	tcome (Course Skill Se		, Hendee –Han, 2004.		
	of the course the stude	·			
CO1		cture of Indian Constitution.			
CO1 CO2		amental Rights, DPSP's and Fundamental Dut	ies (FD's) of our constitution	n	
CO2 CO3					
CO3					
CO4			rtant provisions given by the	constitution	
<b>CO5</b> Remember the Amendments and Emergency Provisions, other important provisions given by the constitution.					

Scientific Foundations of Health				
Subject code	22SFH18/28	Credit: 01		
Hours/Week:	1 hour. (Theory)	SEE: 50 Marks		
Total hours: 15				
	MODULES		TeachingHours	
Module-I Good Health & It's balance for positive mindset: Health -Importance of Health, Influencing factors of Health, Health beliefs, Advantages of good health, Health & Behavior, Health & Society, Health & family, Health & Personality, Psychological disorders-Methods to improve good psychological health, Changing health habits for good health.				
	Module-II			
Nutritional guidelines for good here	etter future: Developing healthy diet for good alth, Obesity & overweight disorders and lth, Wellness and physical function, How to a	its management, Eating	3 hours	
Education, the value of relationship	<b>Module-III</b> <b>lationships :</b> Building communication skills, and communication skills, Relationships fo of life (more than a biology), Changing he	r Better or worsening of	3 hours	
Module -IV Avoiding risks and harmful habits: Characteristics of health compromising behaviors, Recognizing and avoiding of addictions, How addiction develops, Types of addictions, influencing factors of addictions, Differences between addictivepeople and non addictive people & their behaviors. Effects of addictions Such as, how to recovery from addictions.				
Module-V           Preventing & fighting against diseases for good health: How to protect from different types of infections, How to reduce risks for good health, Reducing risks & coping with chronic conditions, Management of chronic illness for Quality of life, Health & Wellness of youth :a challenge for upcoming future, Measuring of health & wealth status.         3 ho				
University Website. 11. "Scientific Foundations of Bangalore – 2022.	of Health" – Study Material Prepared by D f Health", (ISBN-978-81-955465-6-5) publis extbook, FOURTH EDITION by Jane Ogden Press.	shed by Infinite Learning So	olutions,	
<ul> <li>Reference books:</li> <li>13. Health Psychology (Second edition) by Charles Abraham, Mark Conner, Fiona Jones and Daryl O'Connor – Published by Routledge 711 Third Avenue, New York, NY 10017.</li> <li>14. HEALTH PSYCHOLOGY (Ninth Edition) by SHELLEY E. TAYLOR - University of California, Los Angeles, McGraw Hill Education (India) Private Limited - Open University Press.</li> <li>15. SWAYAM / NPTL/ MOOCS/ We blinks/ Internet sources/ YouTube videos and other materials / notes.</li> <li>16. Scientific Foundations of Health (Health &amp; Welness) - General Books published for university andcolleges references by popular authors and published by the reputed publisher.</li> </ul>				
Course outcome (Course Skill Set)         At the end of the course the student will be able to:         CO1       To understand and analyse about Health and wellness (and its Beliefs) & It's balance for positive mindset.         CO2       Develop the healthy lifestyles for good health for their better future.         CO3       Build a Healthy and caring relationships to meet the requirements of good/social/positive life.         CO4       To learn about Avoiding risks and harmful habits in their campus and outside the campus for their bright future.         CO5       Prevent and fight against harmful diseases for good health through positive mindset.				

		ce Based Credit System (Com the academic year 202			
Cours	se Code	22MATE21	CIE Marks	50	
Credi		04	SEE Marks	50	1
	ве Туре	Integrated			1
	act Hours/Week (L-T-P)	2-2-2	Total Marks	100	
Conta	act Hours of Pedagogy	42 hours Theory	Exam Hours	03	
	0.01	+10 Lab slots			
and electron • Analyze end Equations • Develop the numerically	e knowledge of solving ele y.	engineering problems b ctronics and electrical eng -1 Vector Calculus	by applying Partial D gineering problems		1
-	tion: Line integrals, Sur	• • • •	tions to work done by	y a force	and
Self-Study: Vo Applications: (	lume integral and Gauss Conservation of laws, El	6		ctric pote	entials.
Self-Study: Vo Applications: ( (RBT Levels: L	olume integral and Gauss Conservation of laws, El 1, L2 and L3) Module-2 Vector Sj	s divergence theorem. ectrostatics, Analysis o pace and Linear Trans	f streamlines and ele sformations	(6L+	-2T)
Self-Study: Vo Applications: ( (RBT Levels: L.) Importance of applications. Vector spaces: sets, Basis and Linear transfo transformation. Inner product sp Self-study: Any Applications: 1	olume integral and Gauss Conservation of laws, El <u>1, L2 and L3)</u> Module-2 Vector SJ Vector Space and Line Definition and example	s divergence theorem. ectrostatics, Analysis o pace and Linear Trans ear Transformations in es, subspace, linear span d examples, Algebra of Rank and nullity of a li	of streamlines and ele sformations n the field of EC & h, Linearly independe f transformations, Ma inear operator, Rank- action and expansion	(6L+ EE engir ent and de atrix of a Nullity th	<b>2T</b> ) neering epender linear
Self-Study: Vo Applications: ( (RBT Levels: L) Importance of applications. Vector spaces: sets, Basis and Linear transfo transformation. Inner product sp Self-study: An Applications: 1 (RBT Levels: 1	Jume integral and Gauss Conservation of laws, El <u>1, L2 and L3)</u> Module-2 Vector SJ Vector Space and Line Definition and example dimension. rmations: Definition an Change of coordinates, paces and orthogonality. gles and Projections. Ro Image processing, AI & L1, L2 and L3) Module-3 L	a divergence theorem. ectrostatics, Analysis o pace and Linear Transfear Transformations in es, subspace, linear span ad examples, Algebra of Rank and nullity of a li tation, reflection, contra ML, Graphs and netwo aplace Transform	of streamlines and ele sformations n the field of EC & h, Linearly independe f transformations, Ma inear operator, Rank- action and expansion orks, computer graphi	(6L+ EE engir ent and de atrix of a Nullity th	<b>2T)</b> neering epender linear neorem
Self-Study: Vo Applications: ( (RBT Levels: L.) Importance of applications. Vector spaces: sets, Basis and ( Linear transfo transformation. Inner product sp Self-study: An Applications: 1 (RBT Levels: 1)	Jume integral and Gauss Conservation of laws, El 1, L2 and L3) Module-2 Vector Sp Vector Space and Lind Definition and example dimension. rmations: Definition an Change of coordinates, paces and orthogonality. gles and Projections. Ro Image processing, AI & L1, L2 and L3) Module-3 L Laplace Transform fo	a divergence theorem. dectrostatics, Analysis or pace and Linear Transfear Transformations in es, subspace, linear span ad examples, Algebra of Rank and nullity of a li tation, reflection, contra ML, Graphs and netwo aplace Transform r EC & EE engineerin	of streamlines and ele sformations n the field of EC & n, Linearly independent f transformations, Ma inear operator, Rank- action and expansion orks, computer graphing ng applications.	(6L+ EE engir ent and de atrix of a Nullity th a. dcs. (6L+	2T) neering epender linear neorem 3T)
Self-Study: Vo Applications: ( (RBT Levels: L) Importance of applications. Vector spaces: sets, Basis and Linear transfo transformation. Inner product sp Self-study: An Applications: I (RBT Levels: I Importance of Existence and U	lume integral and Gauss Conservation of laws, El <u>1, L2 and L3)</u> Module-2 Vector SJ Vector Space and Line Definition and example dimension. rmations: Definition an Change of coordinates, paces and orthogonality. gles and Projections. Ro Image processing, AI & L1, L2 and L3) Module-3 L Laplace Transform fo Jniqueness of Laplace tr	a divergence theorem. ectrostatics, Analysis or pace and Linear Transfear Transformations in es, subspace, linear span ad examples, Algebra of Rank and nullity of a li tation, reflection, contra ML, Graphs and netwo aplace Transform r EC & EE engineerin ransform (LT), transforr	of streamlines and ele sformations n the field of EC & n, Linearly independent f transformations, Ma inear operator, Rank- action and expansion orks, computer graphic m of elementary func-	(6L+ EE engir ent and de atrix of a Nullity th a. ics. (6L+ ctions, reg	2T) neering epender linear neorem 3T) gion of
Self-Study: Vo Applications: ( (RBT Levels: L.) Importance of applications. Vector spaces: sets, Basis and ( Linear transfo transformation. Inner product sp Self-study: An Applications: I (RBT Levels: I Importance of Existence and U convergence, P: domain, divisio periodic functio Heaviside Unit	lume integral and Gauss Conservation of laws, El 1, L2 and L3) Module-2 Vector Sp Vector Space and Line Definition and example dimension. rmations: Definition an Change of coordinates, paces and orthogonality. gles and Projections. Ro Image processing, AI & L1, L2 and L3) Module-3 L Laplace Transform fo Jniqueness of Laplace tr roperties–Linearity, Sca on by t, differentiation an ons (square wave, saw-to step function, Unit impu	a divergence theorem. dectrostatics, Analysis of pace and Linear Trans- tear Transformations in tes, subspace, linear span- ad examples, Algebra of Rank and nullity of a li tation, reflection, contra ML, Graphs and netwo aplace Transform r EC & EE engineering ransform (LT), transform ling, t-shift property, s- ad integration in the tim- poth wave, triangular wa	of streamlines and ele sformations n the field of EC & n, Linearly independent f transformations, Ma inear operator, Rank- action and expansion orks, computer graphing m of elementary func- domain shift, different e domain, LT of spec-	(6L+ EE engir ent and de atrix of a Nullity th a. ics. (6L+ ctions, reg ntiation in cial funct	2T) neering epender linear neorem 3T) gion of n the s- ions-
Self-Study: Vo Applications: ( (RBT Levels: L) Importance of applications. Vector spaces: sets, Basis and Linear transfo transformation. Inner product sp Self-study: An Applications: I (RBT Levels: I Importance of Existence and U convergence, P domain, divisio periodic functio Heaviside Unit Inverse Laplac Definition, p problems, and A Self-Study: Ve	lume integral and Gauss Conservation of laws, El 1, L2 and L3) Module-2 Vector Sp Vector Space and Lind Definition and example dimension. rmations: Definition an Change of coordinates, paces and orthogonality. gles and Projections. Ro Image processing, AI & L1, L2 and L3) Module-3 L Laplace Transform fo Jniqueness of Laplace tr roperties–Linearity, Sca on by t, differentiation an ons (square wave, saw-to	a divergence theorem. lectrostatics, Analysis o <b>pace and Linear Trans</b> <b>ear Transformations in</b> es, subspace, linear span ad examples, Algebra of Rank and nullity of a li tation, reflection, contra ML, Graphs and netwo <b>aplace Transform</b> <b>r EC &amp; EE engineerin</b> ransform (LT), transforr ling, t-shift property, s-o ad integration in the tim- both wave, triangular wa alse function. ing different methods, c linary differential equation to theorem.	of streamlines and ele sformations n the field of EC & h, Linearly independed f transformations, Ma inear operator, Rank- action and expansion orks, computer graphi m of elementary func- domain shift, differen- te domain, LT of spec- ave, full & half wave convolution theorem tions.	(6L+ EE engir ent and de atrix of a Nullity th a. ics. (6L+ etions, reg ntiation in cial funct e rectifier) (without	2T) neering epender linear neorem 3T) gion of n the s- ions- ), proof),

# Module-4 Numerical methods -1

(5L+3T)

# Importance of numerical methods for discrete data in the field of EC & EE engineering applications.

Solution of algebraic and transcendental equations: Regula-Falsi method and Newton-Raphson method (only formulae). Problems.

Finite differences, Interpolation using Newton's forward and backward difference formulae, Newton's divided difference formula and Lagrange's interpolation formula (All formulae without proof). Problems.

Numerical integration: Trapezoidal, Simpson's (1/3)rd and (3/8)th rules (without proof). Problems. Self-Study: Bisection method, Lagrange's inverse Interpolation, Weddle's rule.

Applications: Estimating the approximate roots, extremum values, Area, volume and surface area. (RBT Levels: L1, L2 and L3)

Module-5 Numerical methods -2

(5L+3T)

# Introduction to various numerical techniques for handling EC & EE applications. Numerical Solution of Ordinary Differential Equations (ODEs):

Numerical solution of ordinary differential equations of first order and first degree – Taylor's series method, Modified Euler's method, Runge-Kutta method of fourth order and Milne's predictor corrector formula (No derivations of formulae). Problems.

Self-Study: Adam-Bashforth method.

Applications: Estimating the approximate solutions of ODE for electric circuits.

(RBT Levels: L1, L2 and L3

List of Laboratory experiments (2 hours/week per batch/ batch strength 15) 10 lab sessions + 1 repetition class + 1 Lab Assessment

1	Finding gradient, divergent, curl and their geometrical interpretation and Verification of
	Green's theorem
2	Computation of basis and dimension for a vector space and Graphical representation of
	linear transformation
3	Visualization in time and frequency domain of standard functions
4	Computing inverse Laplace transform of standard functions
5	Laplace transform of convolution of two functions
6	Solution of algebraic and transcendental equations by Regula-Falsi and Newton-Raphson method
7	Interpolation/Extrapolation using Newton's forward and backward difference formula
8	Computation of area under the curve using Trapezoidal, Simpson's (1/3)rd and (3/8)th rule
9	Solution of ODE of first order and first degree by Taylor's series and Modified Euler's method
10	Solution of ODE of first order and first degree by Runge-Kutta 4th order and Milne's
	predictor-corrector method

Suggested software's: Mathematica/MatLab/Python/Scilab Semester End Examination (SEE):

Theory SEE will be conducted by Institute as per the scheduled timetable, with common question papers for the course (duration 03 hours)

1. The question paper will have ten questions. Each question is set for 20 marks.

2. There will be 2 questions from each module. Each of the two questions under a module (with a

maximum of 3 sub-questions), **should have a mix of topics** under that module.

3. The students have to answer 5 full questions, selecting one full question from each module.

Course outcome (Course Skill Set)

At the end of the course the student will be able to:

CO 1	Understand the applications of vector calculus refer to solenoidal, irrotational vectors,
	line integral and surface integral.
<u> </u>	
CO 2	Demonstrate the idea of Linear dependence and independence of sets in the vector
	space, and linear transformation
CO 3	To understand the concept of Laplace transform and to solve initial value problems.
CO 4	Apply the knowledge of numerical methods in solving physical and engineering
	phenomena
CO 5	Get familiarize with modern mathematical tools namely
	SCILAB/PYTHON/MATLAB
Sugg	ested Learning Resources:
00	Title of the Book/Name of the author/Name of the publisher/Edition and Year)
Text Bo	ooks
1 D	S. Crowal: "Higher Engineering Methometics" Khanne publishers 11, Ed. 2021

1. **B. S. Grewal**: "Higher Engineering Mathematics", Khanna publishers, 44th Ed., 2021.

2. E. Kreyszig: "Advanced Engineering Mathematics", John Wiley & Sons, 10th Ed., 2018. Reference Books

- 1. **V. Ramana:** "Higher Engineering Mathematics" McGraw-Hill Education, 11th Ed., 2017
- 2. Srimanta Pal & Subodh C. Bhunia: "Engineering Mathematics" Oxford University Press, 3rd Ed., 2016.
- 3. **N.P Bali and Manish Goyal**: "A textbook of Engineering Mathematics" Laxmi Publications, 10th Ed., 2022.

4. C. Ray Wylie, Louis C. Barrett: '	'Advanced Engineering Mathematics" McGraw –	Hill
Book Co., Newyork, 6th Ed., 2017.		

5. Gupta C.B, Sing S.R and Mukesh Kumar:	"Engineering Mathematic for Semester I	and

II", Mc-Graw Hill Education(India) Pvt. Ltd 2015.

6. **H. K. Dass and Er. Rajnish Verma:** "Higher Engineering Mathematics" S. Chand Publication, 3rd Ed., 2014.

7. James Stewart: "Calculus" Cengage Publications, 7th Ed., 2019.

8. David C Lay: "Linear Algebra and its Applications", Pearson Publishers, 4th Ed., 2018.

9. Gareth Williams: "Linear Algebra with applications", Jones Bartlett Publishers Inc., 6th Ed., 2017.

Course Title:	Physics for ECE & EEE Stream				
Course Code:	22PHYE12/22	CIE Marks	50		
Course Type (Theory/Practical/Integrated)	Integrated	SEE Marks	50		
		Total Marks	100		
Teaching Hours/Week (L:T:P: S)	2:2:2:0	Exam Hours	03		
Total Hours of Pedagogy	40 hours+10-12 Lab Slots	Credits	04		
Module-1 (08 Hours)					

#### Quantum Mechanics:

de Broglie Hypothesis and Matter Waves, de Broglie wavelength and derivation of expression by analogy, Phase Velocity and Group Velocity, Heisenberg's Uncertainty Principle and its application (Non existence of electron inside the nucleus-Non Relativistic), Principle of Complementarity, Wave Function, Time independent Schrödinger wave equation, Physical Significance of a wave function and Born Interpretation, Expectation value, Eigen functions and Eigen Values, Particle inside one dimensional infinite potential well, Waveforms and Probabilities. Numerical Problems

#### Pre-requisite: Wave–Particle dualism

Self-learning: de Broglie Hypothesis

Module-2 (08 hours)

#### Electrical Properties of Solids:

#### Conductors:

Quantum Free Electron Theory of Metals: Assumptions, Fermi-energy, Fermi factor, Variation of Fermi Factor with Temperature and Energy, Mention of expression for electrical conductivity.

**Dielectric Properties:** Polar and non-polar dielectrics, Electrical Polarization Mechanisms, internal fields insolids, Clausius-Mossotti equation (Derivation), Solid, Liquid and Gaseous dielectrics. Application of dielectrics in transformers, Capacitors, Electrical Insulation. Numerical Problems.

#### Superconductivity:

Introduction to Superconductors, Temperature dependence of resistivity, Meissner Effect, Critical Field, Temperature dependence of Critical field, Types of Super Conductors, BCS theory (Qualitative), High Temperature superconductivity, SQUID, MAGLEV, Numerical problems.

#### Pre-requisites: Classical Free Electron Theory

Self-learning: Dielectrics Basics

#### Module-3 (08 hours)

#### Lasers and Optical Fibers:

Lasers: Characteristics of LASER, Interaction of radiation with matter, Expression for Energy Density and its significance. Requisites of a Laser System. Conditions for Laser action. Principle, Construction and Working of Carbon Dioxide Laser. Application of Lasers in Defense (Laser range finder) and Laser Printing. Numerical Problems **Optical Fibers:** Total Internal Reflection, Propagation mechanism, Angle of Acceptance, Numerical Aperture, Fractional Index Change, Modes of Propagation, Number of Modes and V Number, Types of Optical Fibers. Attenuation and Mention of Expression for Attenuation coefficient, Attenuation Spectrum of an Optical Fiber with Optical Windows. Discussion of Block Diagram of Point to Point Communication, Intensity based Fiber Optic Displacement Sensor, Merits and Demerits, Numerical problems.

#### re-requisite: Properties of light

Self-learning: Total Internal Reflection

#### Maxwell's Equations and EM waves:

**Maxwell's Equations:** Fundamentals of Vector Calculus. Divergence and Curl of Electric field and Magnetic field (static), Gauss' divergence theorem and Stoke's theorem. Description of laws of Electrostatics, Magnetism, Faraday's laws of EMI, Current Density, Equation of Continuity, Displacement Current (with derivation), Maxwell's equations in vacuum, Numerical Problems

**EM Waves**: The wave equation in differential form in free space (Derivation of the equation using Maxwell's equations), Plane Electromagnetic Waves in vacuum, their transverse nature.

# Pre-requisite: Electricity & Magnetism

## Self-learning: Fundamentals of vector calculus.

Module-5 (08 hours)

#### Semiconductors and Devices:

Fermi level in Intrinsic & Extrinsic Semiconductor, Expression for concentration of electrons in conduction band & holes concentration in valance band (only mention the expression), Relation between Fermi energy & Energy gap in intrinsic semiconductors(derivation), Law of mass action, Electrical conductivity of a semiconductor (derivation), Hall effect, Expression for Hall coefficient (derivation) and its application. Photo-diode and Power responsivity, Construction and working of Semiconducting Laser, Four probe method to determine resistivity, Phototransistor, Numerical problems.

## Pre-requisite: Basics of Semiconductors

Self-learning: Fermi level in Intrinsic & Extrinsic Semiconductor

CO1 Describe the fundamental principles of the Quantum Mechanics and the essentials of Photonics.

**CO2Elucidate** the concepts of conductors, dielectrics and superconductivity

CO3 Discuss the fundamentals of vector calculus and their applications in Maxwell's Equations and EM Waves.

**CO4 Summarize** the properties of semiconductors and the working principles of semiconductor devices.

CO5 Practice working in groups to conduct experiments in physics and Perform precise and honest measurements.

#### Laboratory Component:

Any Ten Experiments have to be completed from the list of experiments

Note: The experiments have to be classified into

- a) Exercise
- b) Demonstration
- c) Structured Inquiry

d) Open Ended

Based on the convenience classify the following experiments into above categories selecting at least three experiments for each type. Select at least one simulation/spreadsheet activity.

#### <u>List of Experiments</u>

- 1. Determination of wavelength of LASER using Diffraction Grating.
- 2. Determination of acceptance angle and numerical aperture of the given Optical Fiber.
- 3. Determination of Magnetic Flux Density at any point along the axis of a circular coil.
- 4. Determination of resistivity of a semiconductor by Four Probe Method
- 5. Study the I-V Characteristics of the Given Bipolar Junction Transistor.
- 6. Determination of dielectric constant of the material of capacitor by Charging and Discharging method.
- 7. Study the Characteristics of a Photo-Diode and to determine the power responsivity / Verification ofInverse Square Law of Intensity of Light.
- 8. Study the frequency response of Series & Parallel LCR circuits.
- 9. Determination of Plank's Constant using LEDs.
- 10. Determination of Fermi Energy of Copper.
- 11. Identification of circuit elements in a Black Box and determination of values of the components.
- 12. Determination of Energy gap of the given Semiconductor.
- 13. Step Interactive Physical Simulations.
- 14. Study of motion using spread Sheets
- 15. Study of Application of Statistics using spread sheets
- 16. PHET Interactive
- 17. Determination of frequency of alternating current using Sonometer
- 18. Interference at an Air wedge

Simulations(https://phet.colorado.edu/en/simulations/filter?subjects=physics&type=html,prototype)

INTRO	DUCTION TO ELECTR	ONICS ENGINEEI	RING		
Subject Code	22ECSC143/243	22BEE13/23		CIE: 50	
Number of Lecture Hours/Week	3 (Theory)		SEE: 50		
Total Number of Lecture Hours	40 CREDITS- 3				
Module#			1	Hours	
Module-1				08 Hours	
Power Supplies: Block diagram	, Half-wave rectifier,	Full-wave rectifie	rs and	filters, Voltage	
regulators,Output resistance and	voltage regulation, Vol	tage multipliers. A	mplifie	ers: CE amplifier with	
and without feedback, Multi-stag			_	-	
Module-2				08 Hours	
<b>Operational amplifiers</b> : Ideal op	o-amp; characteristics	of ideal and pract	ical op-		
Practical op-amp circuits: Inve	-	-	-	-	
subtractor, integrator, differentiat	-		-		
oscillators, Ladder network oscil					
stage astable oscillator, Crystal co					
mathematical derivations)			g, ai		
Module-3				08 Hours	
Boolean Algebra and Logic Circ	uits: Rinary numbers	Number Base Cou	iversio		
Numbers, Complements, Basic de					
-			-		
Properties of Boolean Algebra,				-	
Operations, Digital Logic Gates	combinational logic:	Introduction, De	esign pi	cocedure, Adders- Half	
adder, Full adder.					
Module-4		,		08 Hours	
Embedded Systems: Definition,	-				
Embedded Systems, Major appl		=			
System, Core of the Embedded S					
Interfacing: Instrumentation an	d control systems, Tra	ansducers, Sensor	s, Actu	ators, LED, 7- Segment	
LED Display.					
Module-5				08 Hours	
Analog Communication Schem input transducer, Transmitter, (					
Multiplexing, Types of communic			•		
of Radio wave propagation (Gro					
communication over analog com	nmunication, ASK, FSK	K, PSK, Radio signa	al trans	mission Multiple access	
techniques.					
Text books: 1. Mike Tooley, 'Electronic Circuits, Fund https://doi.org/10.4324/97813157379			5. DOI		
<ol> <li>Digital Logic and Computer Design, M. M D P Kothari, I J Nagrath, 'Basic Electronics', 2n</li> </ol>	Iorris Mano, PHI Learning, 200	08 ISBN-978-81-203041			
CO1 Design basic power supply & stu					
<b>CO2</b> To analyze working of op-amp		-			
CO3 Develop competence knowledg make use of basic gate and its fu	inction.	-			
CO4 Understand the concept of emb its interfacing.					
CO5 To study various analog and di	gital modulation and demodul	ationtechniques			

Course Title: INTRODUCTION TO MECHANICAL ENGINEERING						
Course Code:	22ESC144/244	CIE Marks	50			
Course Type	Theory	SEE Marks	50			
(Theory/Practical/Integrated)	-	Total Marks	100			
Teaching Hours/Week (L:T:P: S)	3:0:0:0	Exam Hours	03			
Total Hours of Pedagogy	40 hours	Credits	03			
Module-1 (8 hours)						

# Introduction to Mechanical Engineering (Overview only):

Role of Mechanical Engineering in Industries and Society- Emerging Trends and Technologies in different sectors such as Energy, Manufacturing, Automotive, Aerospace, and Marine sectors.

# Steam Formation and Application:

Modes of heat transfer, Steam formation, Types of steam, Steam properties and applications of steam (simple numerical problems).

# **Energy Sources and Power Plants:**

Basic working principles of Hydel power plant, Thermal power plant, nuclear power plant, Solar power plant, Tidal power plant and Wind power plant.

# Module-2 (8 hours)

# Machine Tool Operations:

**Lathe**: Principle of working of a center lathe, lathe operations: Turning, facing, knurling, thread cutting, taper turning by swivelling the compound rest,

**Drilling Machine**: Working of simple drilling machine, drilling operations: drilling, boring, reaming, tapping, counter sinking, counter boring,

**Milling Machine**: Working and types of milling machine, milling operations: plane milling, end milling and slot milling.

(No sketches of machine tools, sketches to be used only for explaining the operations).

**Introduction to Advanced Manufacturing Systems:** Introduction, components of CNC, advantages and applications of CNC, 3D printing.

# Module-3 (8 hours)

**Introduction to IC Engines**: Components and working principles, 4-Stroke Petrol and Diesel engines, Application of IC Engines, performance of IC engines (Simple numerical).

**Introduction to Refrigeration and Air Conditioning**: Principle of refrigeration, Refrigerants and their desirable properties. Working principle of VCR refrigeration system, working principle of room air conditioner & Applications of air Conditioners

# Module-4 (8 hours)

## Mechanical Power Transmission:

**Gear Drives**: Types - spur, helical, bevel, worm and rack and pinion, velocity ratio, simple and compound gear trains (simple numerical problems)

**Belt Drives**: Introduction, Types of belt drives (Flat and V-Belt Drive), length of the belt and tensions ratio (simple numerical problems)

**Joining Processes**: Soldering, Brazing and Welding, Definitions, classification of welding process, Arc welding, Gas welding, (types of flames), TIG welding, MIG welding and Fusionwelding.

Module-5 (8 hours)

**Insight into future mobility technology;** Electric and Hybrid Vehicles, Components of Electric and Hybrid Vehicles. Advantages and disadvantages of Electric Vehicles (EVs) and Hybrid vehicles.

**Introduction to Mechatronics and Robotics:** open-loop and closed-loop mechatronic systems. Joints & links, Robot anatomy, Applications of Robots in material handling, processing and assembly and inspection.

CO1 Explain the role of mechanical engineering in industry and society, fundamentals of steam and non-conventional energy sources

CO2 Describe different conventional and advanced machining processes, IC engines, propulsive devices, air-conditioning, refrigeration.

CO3 Explain different gear drives, gear trains, aspects of future mobility and fundamentals of robotics

CO4 Determine the condition of steam and its energy, performance parameters of IC engines, velocity ratio and power transmitted through power transmission systems.

CO5 Explain the Working Principle of EV vehicles and concepts of Mechatronics and Robotics Suggested Learning Resources:

Test Books (Title of the Book/Name of the author/Name of the publisher/Edition and Year)

- 8. Elements of Mechanical Engineering, K R Gopala Krishna, Subhash Publications, 2008
- 9. Elements of Workshop Technology (Vol. 1 and 2), Hazra Choudhry and Nirzar Roy, MediaPromoters and Publishers Pvt. Ltd., 2010.

# **Reference Books**

An Introduction to Mechanical Engineering, Jonathan Wickert and Kemper Lewis, Third Edition, 2012

Professional Writing Skills in English					
Subject code					
Hours/Week:	1 hour. (Theory)	SEE: 50 Marks			
Total hours: 15					
MODULES			TeachingHours		
	Module-I				
	Writing and Speaking English: Common				
	sal verbs, Auxiliary verbs and their forms, S		3 hours		
	ubject-verb agreement, Sequence of Tenses a	and errors identification			
in Tenses. Words Confused/Misused.					
	Module-II				
	ing: Organizing Principles of Paragraphs		2.1		
	nce of Proper Punctuation, Precise writing		3 hours		
	Corrections activities. Misplaced modifiers, C	ontractions, Collocations,			
Word Order, Errors due to the Confusi	on of words. Module-III				
Technical Boading and Writing Dr	actices: Technical writing process, Introduct	ion to Tashnisal Danarta			
	es of Reports. Introduction to Technical Pro		3 hours		
	f Technical Proposals. Scientific Writing Pro		5 110018		
	& Sentence Improvement, Cloze Test and The				
and Reported Speech, Spotting Errore	Module -IV	The Detection Excicises.			
Professional Communication for En	<b>nployment:</b> Listening Comprehension, Type	s of Listening Listening			
	lls. Reading Comprehension, Tips for		3 hours		
			J nours		
	Applications, Types of official/employment/business Letters, Resume vs. Bio Data, Profile, CV. Writing effective resume for employment, Emails, Blog Writing and Memos.				
Professional Communication at Workplace: Group Discussion and Professional Interviews,					
	GD and PI's, Intra and Interpersonal C				
	ion Skills and its importance in GD and Inte		3 hours		
and Formal Presentations by Students,					
Text book:					
	ls in English" published by Fillip Learning –				
8) "Functional English" (As	per AICTE 2018 Model Curriculum) (ISBN-9	978-93-5350-047-4) Cenga	ge learning		
India Pvt Limited [Latest E	dition 2019].				
Reference books:					
	J.P.Sudharshana and C.Savitha, Cambridge U				
	by Gajendra Singh Chauhan and Et al, (ISB)	N-978-93-5350-050-4), Cei	ngage learning		
India Pvt Limited [Latest Re	-				
	– Principles and Practice, Third Edition by N	Aeenakshi Raman and Sang	geetha Sharma,		
Oxford University Press 20			2015		
<b>19)</b> High School English Grammar & Composition by Wren and Martin, S Chandh & Company Ltd – 2015.					
20) Effective Technical Communication – Second Edition by M Ashraf Rizvi, McGraw Hill Education (India) Private					
Course outcome (Course Skill Set) At the end of the course the student will be able to:					
CO1       To understand and identify the Common Errors in Writing and Speaking.					
CO1       To understand and identify the Common Errors in writing and Speaking.         CO2       To Achieve better Technical writing and Presentation skills.					
CO2 TO Achieve better Techni CO3 To read Technical propo					
	d Workplace communication skills.	on in different level			
CO5 To learn about Techniqu	es of Information Transfer through presentati	on mannerent level.			

Subject Code	Subject	Stream	Th– Tut-Pr	Credits
22KSK17 / 27	SAMSKRUTHIKA KANNADA	Humanities and Social Sciences	1 - 0 - 0	01
CIE : 50	SEE : 50 SEE : 1 hours 30 Minut	(H.S.S) es	Total : 15 Ho	urs

# ಸಾಂಸ್ಕೃತಿಕ ಕನ್ನಡ - ಕನ್ನಡ ಬಲ್ಲ ಮತ್ತು ಕನ್ನಡ ಮಾತೃಭಾಷೆಯ ವಿದ್ಯಾರ್ಥಿಗಳಿಗೆ ನಿಗದಿಪಡಿಸಿದ ಪಠ್ಯಕ್ರಮ

Course objectives : ಸಾಂಸ್ಕೃತಿಕ ಕನ್ನಡ ಪಠ್ಯ ಕಲಿಕೆಯ ಉದ್ದೇಶಗಳು: The course (22KSK17/27) will enable the students,

- 1. ಪದವಿ ವಿದ್ಯಾರ್ಥಿಗಳಾಗಿರುವುದರಿಂದ ಕನ್ನಡ ಭಾಷೆ, ಸಾಹಿತ್ಯ ಮತ್ತು ಸಂಸ್ಕೃತಿಯ ಪರಿಚಯ ಮಾಡಿಕೊಡುವುದು.
- 2. ಕನ್ನಡ ಸಾಹಿತ್ಯದ ಪ್ರಧಾನ ಭಾಗವಾದ ಆಧುನಿಕಪೂರ್ವ ಮತ್ತು ಆಧುನಿಕ ಕಾವ್ಯಗಳನ್ನು ಪರಿಚಯಿಸಿವುದು.
- 3. ವಿದ್ಯಾರ್ಥಿಗಳಲ್ಲಿ ಸಾಹಿತ್ಯ ಮತ್ತು ಸಂಸ್ಕೃತಿಯ ಬಗ್ಗೆ ಅರಿವು ಹಾಗೂ ಆಸಕ್ತಿಯನ್ನು ಮೂಡಿಸುವುದು.
- 4. ತಾಂತ್ರಿಕ ವ್ಯಕ್ತಿಗಳ ಪರಿಚಯವನ್ನು ಹಾಗೂ ಅವರುಗಳ ಸಾಧಿಸಿದ ವಿಷಯಗಳನ್ನು ಪರಿಚಯಿಸುವುದು.
- 5. ಸಾಂಸ್ಕೃತಿಕ, ಜನಪದ ಹಾಗೂ ಪ್ರವಾಸ ಕಥನಗಳ ಪರಿಚಯ ಮಾಡಿಕೊಡುವುದು.

	ಘಟಕ -1 ಕನ್ನಡ ಸಂಸ್ಕೃತಿ ಮತ್ತು ಭಾಷೆ ಕುರಿತಾದ ಲೇಖನಗಳು (03 hours of pedagogy)
1	ಕರ್ನಾಟಕ ಸಂಸ್ಕೃತಿ - ಹಂಪ ನಾಗರಾಜಯ್ಯ
	ಕರ್ನಾಟಕ ಸಂಸ್ಕೃತ - ಹಂಪ ನಾಗಂತ ಜಯ್ಯ ಕರ್ನಾಟಕದ ಏಕೀಕರಣ : ಒಂದು ಅಪೂರ್ವ ಚರಿತ್ರೆ - ಜಿ. ವೆಂಕಟಸುಬ್ಬಯ್ಯ
з.	ಆಡಳಿತ ಭಾಷೆಯಾಗಿ ಕನ್ನಡ - ಡಾ. ಎಲ್. ತಿಮ್ಮೇಶ ಮತ್ತು ಪ್ರೋ. ವಿ. ಕೇಶವಮೂರ್ತಿ
	ಘಟಕ - 2 ಆಧುನಿಕ ಪೂರ್ವದ ಕಾವ್ಯ ಭಾಗ (03 hours of pedagogy)
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
	ಘಟಕ -3 ಆಧುನಿಕ ಕಾವ್ಯಭಾಗ (03 hours of pedagogy)
1.	ಡಿವಿಜಿ ರವರ ಮಂಕುತಿಮ್ಮನ ಕಗ್ಗದಿಂದ ಅಯ್ದ ಕೆಲವು ಭಾಗಗಳು
2.	ಕುರುಡು ಕಾಂಚಾಣ : ದಾ.ರಾ. ಬೇಂದ್ರೆ
3.	ಹೊಸಬಾಳಿನ ಗೀತೆ : ಕುವೆಂಪು
	ಘಟಕ - 4 ತಾಂತ್ರಿಕ ವ್ಯಕ್ತಿಗಳ ಪರಿಚಯ (03 hours of pedagogy)
1.	ಡಾ. ಸರ್. ಎಂ. ವಿಶ್ವೇಶ್ವರಯ್ಯ : ವ್ಯಕ್ತಿ ಮತ್ತು ಐತಿಹ್ಯ – ಎ. ಎನ್. ಮೂರ್ತಿರಾವ್
2.	ಕರಕುಶಲ ಕಲೆಗಳು ಮತ್ತು ಪರಂಪರೆಯ ವಿಜ್ಞಾನ : ಕರೀಗೌಡ ಬೀಚನಹಳ್ಳಿ
	ಘಟಕ - 5 ಸಾಂಸ್ಕೃತಿಕ, ಜನಪದ ಕಥೆ ಮತ್ತು ಪ್ರವಾಸ ಕಥನ (03 hours of pedagogy)
1.	ಯುಗಾದಿ : ವಸುಧೇಂದ್ರ
2.	ಮೆಗಾನೆ ಎಂಬ ಗಿರಿಜನ ಪರ್ವತ : ಹಿ.ಚಿ. ಬೋರಲಿಂಗಯ್ಯ
Course o	outcome (Course Skill Set)
ಸಾಂಸ್ಕ	್ರತಿಕ ಕನ್ನಡ (22KSK17/27) ಪಠ್ಯ ಕಲಿಕೆಯ ನಂತರ ವಿದ್ಯಾರ್ಥಿಗಳಲ್ಲಿ :
At the en	d of the course the student will be able to:
C01	ಕನ್ನಡ ಭಾಷೆ, ಸಾಹಿತ್ಯ ಮತ್ತು ಕನ್ನಡದ ಸಂಸ್ಕೃತಿಯ ಕುರಿತು ಅರಿವು ಮೂಡಿರುತ್ತದೆ.
CO2	ಕನ್ನಡ ಸಾಹಿತ್ಯದ ಆಧುನಿಕ ಪೂರ್ವ ಮತ್ತು ಆಧುನಿಕ ಕಾವ್ಯಗಳನ್ನು ಸಾಂಕೇತಿಕವಾಗಿ ಕಲಿತು ಹೆಚ್ಚಿನ ಓದಿಗೆ
	ಮತ್ತು ಜ್ಯಾನಕ್ಕೆ ಸ್ಪೂರ್ತಿ ಮೂಡುತ್ತದೆ.
CO3	ವಿದ್ಯಾರ್ಥಿಗಳಲ್ಲಿ ಸಾಹಿತ್ಯ ಮತ್ತು ಸಂಸ್ಕೃತಿಯ ಬಗ್ಗೆ ಅರಿವು ಹಾಗೂ ಆಸಕ್ತಿಯನ್ನು ಹೆಚ್ಚಾಗುತ್ತದೆ.
CO4	ತಾಂತ್ರಿಕ ವ್ಯಕ್ತಿಗಳ ಪರಿಚಯ ಹಾಗೂ ಅವರುಗಳ ಸಾಧಿಸಿದ ವಿಷಯಗಳನ್ನು ತಿಳಿದುಕೊಂಡು ನಾಡಿನ ಇನ್ನಿತರ
	ವ್ಯಕ್ತಿಗಳ ಬಗ್ಗೆ ತಿಳಿದುಕೊಳ್ಳಲು ಕೌತುಕತೆ ಹೆಚ್ಚಾಗುತ್ತದೆ.
C05	ಸಾಂಸ್ಕೃತಿಕ, ಜನಪದ ಹಾಗೂ ಪ್ರವಾಸ ಕಥನಗಳ ಪರಿಚಯ ಮಾಡಿಕೊಡುವುದು.

#### **Pattern of question paper**

2. SEE Paper shall be set for 50 questions, each carrying 1 mark. The pattern of the question paper is MCQ

University P	Prescribed Textbook :
	ಸಾಂಸ್ಕೃತಿಕ ಕನ್ನಡ
	ಡಾ. ಹಿ.ಚಿ.ಬೋರಲಿಂಗಯ್ಯ ಮತ್ತು ಡಾ. ಎಲ್. ತಿಮ್ಮೇಶ,
	ಪ್ರಕಟಣೆ : ಪ್ರಸಾರಾಂಗ,
	ವಿಶ್ವೇಶ್ವರಯ್ಯ ತಾಂತ್ರಿಕ ವಿಶ್ವವಿದ್ಯಾಲಯ, ಬೆಳಗಾವಿ.
ವಿಶೇಷ ಸೂಚನೆ : 1.	ಮೇಲಿನ ಪಠ್ಯಕ್ರಮಕ್ಕೆ ಸೀಮಿತವಾಗಿ ಅಂತಿಮ ಪರೀಕ್ಷೆಯ ಪ್ರಶ್ನೆಪತ್ರಿಕೆ ಇರುತ್ತದೆ.
2.	ಮೇಲಿನ ಪಠ್ಯಕ್ರಮವನ್ನು ಹೊರತುಪಡಿಸಿದ ಸಾಂಸ್ಕೃತಿಕ ಕನ್ನಡ ಪಠ್ಯಪುಸ್ತಕದಲ್ಲಿನ ಉಳಿದ ಪದ್ಯ &
	ಗದ್ಯ ಭಾಗ ಹಾಗೂ ಇತರ ಲೇಖನಗಳನ್ನು ಹೆಚ್ಚುವರಿ ಪೂರಕ ಓದಿಗಾಗಿ ಬಳಸಿಕೊಳ್ಳಬಹುದು. ಅಂತಿಮ ಪರೀಕ್ಷೆಯಲ್ಲಿ ಈ ಪಾಠಗಳಿಂದ ಪ್ರಶ್ನೆಗಳನ್ನು ಕೇಳಲಾಗುವುದಿಲ್ಲ.
3.	ಹೆಚ್ಚಿನ ಮಾಹಿತಿ ಮತ್ತು ವಿವರಣೆಗಳಿಗೆ ಡಾ. ಎಲ್. ತಿಮ್ಮೇಶ (9900832331) ಇವರನ್ನು ಸಂಪರ್ಕಿಸಿ.
4.	ಮಾದರಿ ಪ್ರಶ್ನೆಪತ್ರಿಕೆ, ಕೋರ್ಸ್ ಆಯ್ಕೆ ಮಾಹಿತಿ, ಅಧ್ಯಯನ ಸಾಮಗ್ರಿ & ಬಹು ಆಯ್ಕೆ ಮಾದರಿಯ ಪ್ರಶ್ನೆಗಳ ಕೈಪಿಡಿಗಾಗಿ ವಿಶ್ವವಿದ್ಯಾಲಯದ ವೆಬ್ ಸೈಟ್ ನೋಡುವುದು.
	arning (Suggested Activities in Class)/ Practical Based learning elated activities (Activity-based discussions)
	participation of students instruct the students to prepare Flowcharts and Handouts

- Organising Group wise discussions Connecting to placement activities
   Quizzes and Discussions, Seminars and assignments.

# ಬಳಕೆ ಕನ್ನಡ - baLake Kannada (Kannada for Usage)

# ಕನ್ನಡ ಕಲಿಕೆಗಾಗಿ <u>ನಿಗದಿ</u>ಪಡಿಸಿದ ಪಠ್ಯಪುಸ್ತಕ - (Prescribed Textbook to Learn Kannada)

Subject Code	Subject	Stream	Th– Tut-Pr	Credits
22KBK17 / 27	BALAKE KANNADA	A Humanities	1 - 0 - 0	01
		and Social		
		Sciences		
		(H.S.S)		
CIE : 50	SEE : 50	SEE : 1 hours 30 Minutes	s T	otal : 15 Ho

# Course objectives : ಬಳಕೆ ಕನ್ನಡ ಪಠ್ಯ ಕಲಿಕೆಯ ಉದ್ದೇಶಗಳು:

The course (22KBK17/27) will enable the students,

- 1. To Create the awareness regarding the necessity of learning local language for comfortable and healthy life.
- 2. To enable learners to Listen and understand the Kannada language properly.
- 3. To speak, read and write Kannada language as per requirement.
- 4. To train the learners for correct and polite conservation.
- 5. To know about Karnataka state and its language, literature and General information about this state.

# Course outcome (Course Skill Set)

# ಬಳಕೆ ಕನ್ನಡ ಪಠ್ಯ ಕಲಿಕೆಯಿಂದ ವಿದ್ಯಾರ್ಥಿಗಳಿಗೆ ಆಗುವ ಅನುಕೂಲಗಳು ಮತ್ತು ಫಲಿತಾಂಶಗಳು:

At the end of the course the student will be able to:

C01	To understand the necessity of learning of local language for comfortable life.
C02	To speak, read and write Kannada language as per requirement.
CO3	To communicate (converse) in Kannada language in their daily life with kannada speakers.
CO4	To Listen and understand the Kannada language properly.
C05	To speak in polite conservation.

# Module - 1 (03 hours of pedagogy) 1. Introduction, Necessity of learning a local language. Methods to learn the Kannada language.

- Easy learning of a Kannada Language: A few tips. Hints for correct and polite conservation, Listening and Speaking Activities, Key to Transcription
- ವೈಯಕ್ತಿಕ, ಸ್ವಾಮ್ಯಸೂಚಕ/ಸಂಬಂಧಿತ ಸಾರ್ವನಾಮಗಳು ಮತ್ತು ಪ್ರಶ್ನಾರ್ಥಕ ಪದಗಳು Personal Pronouns, Possessive Forms, Interrogative words

Module - 2	(03 hours of pedagogy)
<ol> <li>ನಾಮಪದಗಳ ಸಂಬಂಧಾರ್ಥಕ ರೂಪಗಳು, ಸಂದೇಹಾಸ್ಪದ ಪ</li> </ol>	ಶ್ರಶ್ನೆಗಳು ಮತ್ತು ಸಂಬಂಧವಾಚಕ
ನಾಮಪದಗಳು - Possessive forms of nouns, dubitive q	
2. ಗುಣ, ಪರಿಮಾಣ ಮತ್ತು ವರ್ಣಬಣ್ಣ ವಿಶೇಷಣಗಳು, ಸಂಖ್ಯಾವ Colour Adjectives, Numerals	ಠಚಕಗಳು Qualitative, Quantitative and
3. ಕಾರಕ ರೂಪಗಳು ಮತ್ತು ವಿಭಕ್ತಿ ಪ್ರತ್ಯಯಗಳು –ಸಪ್ತಮಿ ವಿಭಕ್ತಿ ಪ್ರತ್ಯಯ – (ಆ, ಅದ	ಬ, ಅವು, ಅಲ್ಲಿ) – Predictive Forms, Locative Case
Module - 3	(03 hours of pedagogy)
1. ಚತುರ್ಥಿ ವಿಭಕ್ತಿ ಪ್ರತ್ಯಯದ ಬಳಕೆ ಮತ್ತು ಸಂಖ್ಯಾವಾಚಕಗಳು - Dative Cases	, and Numerals
2. ಸಂಖ್ಯಾಗುಣವಾಚಕಗಳು ಮತ್ತು ಬಹುವಚನ ನಾಮರೂಪಗಳು -Ordinal nur	merals and Plural markers
3. ನ್ಯೂನ/ನಿಷೇಧಾರ್ಥಕ ಕ್ರಿಯಾಪದಗಳು & ವರ್ಣ ಗುಣವಾಚಕಗಳು –Defectiv	ve/Negative Verbs & Colour Adjectives
Module- 4	(03 hours of pedagogy
1. ಅಪ್ಪಣೆ / ಒಪ್ಪಿಗೆ, ನಿರ್ದೇಶನ, ಪ್ರೋತ್ಸಾಹ ಮತು ಒತ್ತಾಯ ಆರ್ಥರ.	ೂಪ ಪದಗಳು ಮತ್ತು ವಾಕ್ಯಗಳು
Permission, Commands, encouraging and Urging words (Imper	ative words and sentences)
2. ಸಾಮಾನ್ಯ ಸಂಭಾಷಣೆಗಳಲ್ಲಿ ದ್ವಿತೀಯ ವಿಭಕ್ತಿ ಪ್ರತ್ಯಯಗಳು ಮತ್ತ	್ತು ಸಂಭವನೀಯ ಪ್ರಕಾರಗಳು
Accusative Cases and Potential Forms used in General Communi	cation
3. "ಇರು ಮತ್ತು ಇರಲ್ಲ" ಸಹಾಯಕ ಕ್ರಿಯಾಪದಗಳು, ಸಂಭಾವ್ಯಸೂಚ	ಕ ಮತ್ತು ನಿಷೇಧಾರ್ಥಕ ಕ್ರಿಯಾ ಪದಗಳು -
Helping Verbs "iru and iralla", Corresponding Future and Negation	Nerbs
4. ಹೋಲಿಕೆ (ತರತಮ) , ಸಂಬಂಧ ಸೂಚಕ, ವಸ್ತು ಸೂಚಕ ಪ್ರತ್ಯಯ	ಗಳು ಮತ್ತು ನಿಷೇಧಾರ್ಥಕ ಪದಗಳ ಬಳಕೆ-
Comparitive, Relationship, Identification and Negation Words	
Module - 5	(03 hours of pedagogy)
1. ಕಾಲ ಮತ್ತು ಸಮಯದ ಹಾಗೂ ಕ್ರಿಯಾಪದಗಳ ವಿವಿಧ ಪ್ರಕಾರಗಳು	-Different types of Tense, Time and Verbs
2. ದ್, -ತ್, - ತು, - ಇತು, - ಆಗಿ, - ಅಲ್ಲ, - ಗ್, -ಕ್, ಇದೆ, ಕ್ರಿಯಾ ಪ್ರತ್ಯಯ	ುಗಳೊಂದಿಗೆ ಭೂತ, ಭವಿಷ್ಯತ್ ಮತ್ತು
<b>ವರ್ತಮಾನ ಕಾಲ ವಾಕ್ಯ ರಚನೆ</b> - Formation of Past, Future and P	Present Tense Sentences with Verb Forms
3. Kannada Vocabulary List :ಸಂಭಾಷಣೆಯಲ್ಲಿ ದಿನೋಪಯೋಗಿ ಕನ್ನ	ಡ ಪದಗಳು -Kannada Words in Conversation
University Prescribed Textbook :	
1. 1997 Sci. 1997 Sci. 1998 Sci. 1997 Sci. 1998 Sci. 1998 Sci. 1998 Sci. 1998 Sci. 1997 Sci.	
ಬಳಕೆ ಕನ್ನಡ	
ಡಾ. ಎಲ್. ತಿಮ್ಮೇಶ	
	<u>.</u>
ಪ್ರಕಟಣೆ : ಪ್ರಸಾರಾಂಗ	-1
	The second
ಪ್ರಕಟಣೆ : ಪ್ರಸಾರಾಂಗ ವಿಶ್ವೇಶ್ವರಯ್ಯ ತಾಂತ್ರಿಕ ವಿಶ್ವವಿದ್ಯಾಲ ಸೂಚನೆ :	The second
ವಿಶ್ವೇಶ್ವರಯ್ಯ ತಾಂತ್ರಿಕ ವಿಶ್ವವಿದ್ಯಾಲ ಸೂಚನೆ : ವಿಶೇಷ ಸೂಚನೆ : 1. ಮೇಲಿನ ಪಠ್ಯಕ್ರಮಕ್ಕೆ ಸೀಮಿತವಾಗಿ ಅಂತಿಮ ಪರೀಕ್ಷೆಂ	ಯ, ಬೆಳಗಾವಿ. ಯ ಪ್ರಶ್ನೆಪತ್ರಿಕೆ ಇರುತ್ತದೆ.
ವಿಶ್ವೇಶ್ವರಯ್ಯ ತಾಂತ್ರಿಕ ವಿಶ್ವವಿದ್ಯಾಲ ಸೂಚನೆ : ವಿಶೇಷ ಸೂಚನೆ : 1. ಮೇಲಿನ ಪಠ್ಯಕ್ರಮಕ್ಕೆ ಸೀಮಿತವಾಗಿ ಅಂತಿಮ ಪರೀಕ್ಷೆಂ 2. ಮೇಲಿನ ಪಠ್ಯಕ್ರಮವನ್ನು ಹೊರತುಪಡಿಸಿದ ಬಳಕೆ ಕನ	ಯ, ಬೆಳಗಾವಿ. ಯ ಪ್ರಶ್ನೆಪತ್ರಿಕೆ ಇರುತ್ತದೆ. ರೈಡ ಪಠ್ಯಪುಸ್ತಕದಲ್ಲಿನ ಉಳಿದ ಭಾಗಳನ್ನು
ವಿಶ್ವೇಶ್ವರಯ್ಯ ತಾಂತ್ರಿಕ ವಿಶ್ವವಿದ್ಯಾಲ ಸೂಚನೆ : ವಿಶೇಷ ಸೂಚನೆ : 1. ಮೇಲಿನ ಪಠ್ಯಕ್ರಮಕ್ಕೆ ಸೀಮಿತವಾಗಿ ಅಂತಿಮ ಪರೀಕ್ಷೆಂ	ಯ, ಬೆಳಗಾವಿ. ಯ ಪ್ರಶ್ನೆಪತ್ರಿಕೆ ಇರುತ್ತದೆ. ರೈಡ ಪಠ್ಯಪುಸ್ತಕದಲ್ಲಿನ ಉಳಿದ ಭಾಗಳನ್ನು
ವಿಶ್ವೇಶ್ವರಯ್ಯ ತಾಂತ್ರಿಕ ವಿಶ್ವವಿದ್ಯಾಲ ಸೂಚನೆ : ವಿಶೇಷ ಸೂಚನೆ : 1. ಮೇಲಿನ ಪಠ್ಯಕ್ರಮಕ್ಕೆ ಸೀಮಿತವಾಗಿ ಅಂತಿಮ ಪರೀಕ್ಷೆಂ 2. ಮೇಲಿನ ಪಠ್ಯಕ್ರಮವನ್ನು ಹೊರತುಪಡಿಸಿದ ಬಳಕೆ ಕನ	ಯ, ಬೆಳಗಾವಿ. ಯ ಪ್ರಶ್ನೆಪತ್ರಿಕೆ ಇರುತ್ತದೆ. ರೈಡ ಪಠ್ಯಪುಸ್ತಕದಲ್ಲಿನ ಉಳಿದ ಭಾಗಳನ್ನು
ವಿಶ್ವೇಶ್ವರಯ್ಯ ತಾಂತ್ರಿಕ ವಿಶ್ವವಿದ್ಯಾಲ ಸೂಚನೆ : ವಿಶೇಷ ಸೂಚನೆ : 1. ಮೇಲಿನ ಪಠ್ಯಕ್ರಮಕ್ಕೆ ಸೀಮಿತವಾಗಿ ಅಂತಿಮ ಪರೀಕ್ಷೆಂ 2. ಮೇಲಿನ ಪಠ್ಯಕ್ರಮವನ್ನು ಹೊರತುಪಡಿಸಿದ ಬಳಕೆ ಕನ ಹೆಚ್ಚುವರಿ ಪೂರಕ ಓದಿಗಾಗಿ ಬಳಸಿಕೊಳ್ಳಬಹುದು. ಅಂ ಪ್ರಶ್ನೆಗಳನ್ನು ಕೇಳಲಾಗುವುದಿಲ್ಲ.	ಯ, ಬೆಳಗಾವಿ. ಯ ಪ್ರಶ್ನೆಪತ್ರಿಕೆ ಇರುತ್ತದೆ. ರ್ನಡ ಪಠ್ಯಪುಸ್ತಕದಲ್ಲಿನ ಉಳಿದ ಭಾಗಳನ್ನು ಂತಿಮ ಪರೀಕ್ಷೆಯಲ್ಲಿ ಈ ಪಾಠಗಳಿಂದ
ವಿಶ್ಯೇಶ್ವರಯ್ಯ ತಾಂತ್ರಿಕ ವಿಶ್ವವಿದ್ಯಾಲ ಸೂಚನೆ : ವಿಶೇಷ ಸೂಚನೆ : 1. ಮೇಲಿನ ಪಠ್ಯಕ್ರಮಕ್ಕೆ ಸೀಮಿತವಾಗಿ ಅಂತಿಮ ಪರೀಕ್ಷೆಂ 2. ಮೇಲಿನ ಪಠ್ಯಕ್ರಮವನ್ನು ಹೊರತುಪಡಿಸಿದ ಬಳಕೆ ಕನ ಹೆಚ್ಚುವರಿ ಪೂರಕ ಓದಿಗಾಗಿ ಬಳಸಿಕೊಳ್ಳಬಹುದು. ಅಂ ಪ್ರಶ್ನೆಗಳನ್ನು ಕೇಳಲಾಗುವುದಿಲ್ಲ. 	ಯ, ಬೆಳಗಾವಿ. ಯ ಪ್ರಶ್ನೆಪತ್ರಿಕೆ ಇರುತ್ತದೆ. ರೈಡ ಪಠ್ಯಪುಸ್ತಕದಲ್ಲಿನ ಉಳಿದ ಭಾಗಳನ್ನು ಂತಿಮ ಪರೀಕ್ಷೆಯಲ್ಲಿ ಈ ಪಾಠಗಳಿಂದ ್ಮೇಶ (9900832331) ಇವರನ್ನು ಸಂಪರ್ಕಿಸಿ.
ವಿಶ್ವೇಶ್ವರಯ್ಯ ತಾಂತ್ರಿಕ ವಿಶ್ವವಿದ್ಯಾಲ ಸೂಚನೆ : ವಿಶೇಷ ಸೂಚನೆ : 1. ಮೇಲಿನ ಪಠ್ಯಕ್ರಮಕ್ಕೆ ಸೀಮಿತವಾಗಿ ಅಂತಿಮ ಪರೀಕ್ಷೆಂ 2. ಮೇಲಿನ ಪಠ್ಯಕ್ರಮವನ್ನು ಹೊರತುಪಡಿಸಿದ ಬಳಕೆ ಕನ ಹೆಚ್ಚುವರಿ ಪೂರಕ ಓದಿಗಾಗಿ ಬಳಸಿಕೊಳ್ಳಬಹುದು. ಅಂ ಪ್ರಶ್ನೆಗಳನ್ನು ಕೇಳಲಾಗುವುದಿಲ್ಲ.	ಯ, ಬೆಳಗಾವಿ. ಯ ಪ್ರಶ್ನೆಪತ್ರಿಕೆ ಇರುತ್ತದೆ. ರೈಡ ಪಠ್ಯಪುಸ್ತಕದಲ್ಲಿನ ಉಳಿದ ಭಾಗಳನ್ನು ಂತಿಮ ಪರೀಕ್ಷೆಯಲ್ಲಿ ಈ ಪಾಠಗಳಿಂದ ್ಮೇಶ (9900832331) ಇವರನ್ನು ಸಂಪರ್ಕಿಸಿ.

Pattern of question paper4. SEE Paper shall be set for 50 questions, each carrying 1 mark. The pattern of the question paper is MCQ

C 1		INNOVATION and DESIGN THINKING	
Subj	iect code	21IDT18/28 Credit: 01	
Hou	rs/Week:	1 hour. (Theory) SEE: 50 Marks	
	hours: 25	CIE: 50 Marks SEE: 2 hours	
Prerequisite: N	Vil		
Course objecti	ves		
• To ex	plain the concept of de	esign thinking for product and service development	
		concept of innovation and design thinking	
		nplementing design thinking in the real world.	
10 01	seuss the methods of m	MODULES	Hours
		Module-I	IIIuii
PROCESS OF	DESIGN	Wibuur-1	
	Design thinking		
		- Theory and practice in Design thinking - Explore presentation signers	
	MVP or Prototyping	Theory and practice in Design anniking Explore presentation signers	5
Teaching-		he design thinking: Chalk and Talk method Theory and practice through	
Learning		d Prototyping through live examples and videos	
Process	presentation wivi and	a rototyping unough rive examples and videos	
1100055			_
		Module-II	5
<b>Tools for Desig</b>			
		and analysis – Enabling efficient collaboration in digital space – Empathy for	
design – Collab	oration in distributed D	Design	
Teaching-	Case studies on desi	ign thinking for real-time interaction and analysis Simulation exercises for	
Learning	collaborated enabled		
Process		e success of collaborated design thinking	
	•	Module-III	5
Design Thinkin	ng in IT		
		s modeling - Agile in Virtual collaboration environment - Scenario based	
Prototyping	-8		
Teaching-	Case studies on desi	ign thinking and business acceptance of the design Simulation on the role of	
Learning		or collaborated prototyping	
Process		si tonaconate protosping	
		Module -IV	5
<b>DT For strateg</b>	ic innovations		
-		- Strategic Foresight - Change - Sense Making - Maintenance Relevance -	
		tion – experience design - Standardization – Humanization - Creative Culture	
Value redefiniti			
		anization – Business Model	
	ping, Strategy and Org	anization – Business Model	
<ul> <li>Rapid prototy design.</li> </ul>	ping, Strategy and Org		_
<ul> <li>Rapid prototy design.</li> <li>Teaching-</li> </ul>	ping, Strategy and Org Business model exar	mples of successful designs	_
<ul> <li>Rapid prototy design.</li> <li>Teaching- Learning</li> </ul>	ping, Strategy and Org Business model exar		-
<ul> <li>Rapid prototy design.</li> <li>Teaching- Learning</li> </ul>	ping, Strategy and Org Business model exar Presentation by the st	mples of successful designs tudents on the success of design Live project on design thinking in a group of 4	-
<ul> <li>Rapid prototy design.</li> <li>Teaching-</li> <li>Learning</li> <li>Process</li> </ul>	ping, Strategy and Org Business model exar Presentation by the st students	mples of successful designs	5
<ul> <li>Rapid prototy design.</li> <li>Teaching-</li> <li>Learning</li> <li>Process</li> <li>Design thinking</li> </ul>	ping, Strategy and Org Business model exar Presentation by the st students sworkshop	mples of successful designs tudents on the success of design Live project on design thinking in a group of 4 <b>Module-V</b>	5
<ul> <li>Rapid prototy design.</li> <li>Teaching- Learning</li> <li>Process</li> <li>Design thinking</li> <li>Design Thinking</li> </ul>	ping, Strategy and Org Business model exar Presentation by the st students g workshop g Work shop Empathize	mples of successful designs tudents on the success of design Live project on design thinking in a group of 4 Module-V re, Design, Ideate, Prototype and Test	5
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- Rapid prototy design. Teaching- Learning Process Design thinking Design Thinking Teaching- Learning Process Text book: 13. John K 14. Roger 15. Hasso - Appl 16. Idris M Reference books: 7. Youse 8. Book. Course outcome (Cour At the end of the cours CO1 Ap CO2 Ge	ping, Strategy and Org Business model exar Presentation by the st students workshop g Work shop Empathiza 8 hours design think learning from the wo Karsnitz, Stephen O'Brien and John I Martin, "The Design of Business: Why Plattner, Christoph Meinel and Larry I y", Springer, 2011 Motee, "Design Thinking for Strategic f Haik and Tamer M.Shahin, "Enginee -Solving Problems with Design Thinki Author), Kevin Bennett (Author), se Skill Set) e the student will be able to:	mples of successful designs tudents on the success of design Live project on design thinking in a group of 4 Module-V te, Design, Ideate, Prototype and Test king workshop from the expect and then presentation by the students on the orkshop P. Hutchinson. "Engineering Design". Cengagelearning (International edition) Second Edition. 2013. y Design Thinking is the Next Competitive Advantage", Harvard Business Press., 2009. Leifer (eds), "Design Thinking: Understand – Improve c Innovation: What They Can't Teach You at Businessor Design School". John Wiley & Sons 2013. ering Design Process", CengageLearning, Second Edition, 2011. ing - Ten Stories of What Works (Columbia Business School Publishing) Hardcover – 20 Sep 2013 by Jeanne Liedtka (Author). And dure mrough_differenttechnique	

			P.D.A College of Engineer					stituti	on)				
	Outcome	Pasad Educatio	Scheme of Tea on (OBE)and Choice Based	ching and Exami				a fron	a tha ac	adamia	100 r 20	22 22)	
I Seme		Engineering Str	· · · · · ·	Credit System (C.		<u>`</u>		y Gro			year 20	22-23)	
					Teac Hour	hing		<u> </u>		ination			
SI. No	Co	urse and Course Code	Course Title	TD/PSB	Theo rv	Tutori	Practical/	SDA	Duration in hours	CIEMar ks	SEEMarks	Tot al Ma	
					L		S						
1	ASC(IC)	22MATE11	Mathematics for EEE Stream-I	Maths	2	2	2	0	03	50	50	100	04
2	ASC(IC)	22CHEE12	Chemistry for EEE Stream	Chemistry	2	2	2	0	03	50	50	100	04
3	ESC	22CED13	Computer-Aided Engineering Drawing	Respective Dept.	2	0	2	0	03	50	50	100	03
4	ESC-I	22ESC145	Introduction to C Programming	Respective EnggDept	3	0	0	0	03	50	50	100	03
5	ETC-I	22ETC15X	Engineering Technology courses	EEE	3	0	0	0	03				
6	AEC	22ENG16	Communicative English	Humanities	1	0	0	0	1.5	50	50	100	01
7	HSMS	22ICO17/27	Indian Constitution	Humanities	1	0	0	0	01	50	5 0	100	01
8	HSMS	22SFH18	Scientific Foundations of Health	AnyDept	1	10	0	0	01	50	50	100	01
		·		TOTAL						400	400	800	20

			P.D.A College of Engineering Scheme of Teachir	ng and Examina	tions	-202	22						
<b>H</b> C			(OBE)and Choice Based Cre	dit System(CBC	ES) (E	ffec	tive f	from	the aca	demic	e year 2	,	<u> </u>
II Sen	nester (EEE	Stream ))		1	<b>a</b>	1.1.1			Exam	• • •		(Physics	Group)
	Course and	CourseCode	CourseTitle		Tea Hou		0		Exam	unauo	n		
SI	course and	coursecoue	coursernie			T	1		u		ks		
N 0			asayat		Theor	Tutorial	Practical	SDA	Duration	CIEMar ks	SEEMarks	To tal Ma	dits
U				E	L	т	Р	S	9	ks Cl	SE		Credits
1	ASC(IC)	22MATE21	Mathematics for EEE stream-II	Maths	2	2	2	0	03	50	50	100	04
2	ASC(IC)	22PHYE22	Physics for EEE Stream	РНҮ	2	2	2	0	03	50	50	100	04
3	ESC	22EEE23	Elements of electrical engineering	Electric Engg. Dept.	2	2	0	0	03	50	50	100	03
4	ESC-I	22ESC243	Introduction to Electronic Engineering	Respective Engg dept	3	0	0	0	03	50	50	100	03
5.	PLC-I	22PLC25X	Programming Language Courses-I&II	Any dept	2	0	2	0	03	50	50	100	03
6	AEC	22PWS26	Professional Writing Skills in English	Humanitie s	1	0	0	0	1.5	50	50	100	01
7	HSMC	22KSK27/ 22KBK27	Samskrutika Kannada/ Balake Kannada	Humanities	1	0	0	0	1.5	50	50	100	01
8	AEC/SDC	22IDT28	Innovation and Design Thinking	Any Dept	1	0	0	0	01	50	50	100	01
				TOTAL						400	400	800	20

	Based Credit System (CBC	CS) scheme]	
	n the academic year 2022-2		- <b>I</b>
Course Code	<b>22MATE11</b>	CIE Marks	50
Credits	04	SEE Marks	50
Course Type	Integrated		
Contact Hours/Week (L-T-P)	2-2-2	<b>Total Marks</b>	100
Contact Hours of Pedagogy	42 hours Theory +10 Lab slots	Exam Hours	03
<ul> <li>Introduction to polar coordinates and curvate Polar coordinates, Polar curves, angle betwee Pedal equations. Curvature and Radius of curvate Problems.</li> <li>Self-study: Center and circle of curvature, evol Applications: Communication signals, Manufate RBT Levels: L1, L2 and L3)</li> </ul>	en the radius vector and the ature - Cartesian, Parametric lutes and involutes.	e tangent, and angle betwee c, Polar and Pedal forms. d Image processing.	Simple
ntroduction to series expansion and partial Taylor's and Maclaurin's series expansion for indeterminate forms : L-Hospital's rule, problem Partial differentiation, total derivative - differ roblems. Maxima and minima for a function of elf-study: Euler's theorem and problems. Met pplications: Series expansion in communicat Module-3 Ordinary Differ introduction to first-order ordinary differen C&EE engineering.	differentiation in the field or one variable (Statement o ms. entiation of composite func of two variables – Simple Pr thod of Lagrange's undetern ion signals, Errors and appr rential Equations (ODEs)	of EC&EE engineering nly) – problems. tions. Jacobian and oblems. nined multipliers with sir oximations.(RBT Levels: L (6L+3T)	applications.
on $\frac{1}{N} \left( \frac{\partial M}{\partial y} - \frac{\partial N}{\partial x} \right)$ and $\frac{1}{M} \left( \frac{\partial N}{\partial x} - \frac{\partial M}{\partial y} \right)$ Drthogonal trajectories, L-R and C-R circuits.P			
mportance of higher-order ordinary differe ligher-order linear ODEs with constant coeffic ariation of parameters. Self-Study: Applications of ODEs in EC&EE I lifferential equations - Problems. Applications of ordinary differential equation	tients - Inverse differential of Engineering field. Cauchy's <b>ns:</b> Rate of Growth or Deca	operator, method of and Legendre's homoge ay, ( <b>RBT Levels: L1, L2</b>	neous
Module-4 Integra ntroduction to Integral Calculus in EC&EE Aultiple Integrals: Evaluation of double and t hange of order of integration, changing into por /olume by double integral. Problems. Beta and Gamma functions: Definitions, prop Self-Study: Volume by triple integration, Center Applications: Antenna and wave propagation, ircuits, field theory(RBT Levels: L1, L2 and	E Engineering applications riple integrals, evaluation o olar coordinates. Application perties, relation between Ber er of gravity. Calculation of optimum por L3)	f double integrals by ns to find Area and ta and Gamma functions. wer in electrical	Problems.
Module-5 Lin introduction of linear algebra related to ECo Elementary row transformation of a matrix, equations - Gauss-elimination method, Gauss-J Eigen values and Eigenvectors, Rayleigh's pow Self-Study: Solution of a system of linear equa Cayley- Hamilton theorem. Applications of Linear Algebra: Network An RBT Levels: L1, L2 and L3)	Rank of a matrix. Consister ordan method and approxin ver method to find the domi tions by Gauss-Jacobi iterat	ncy and solution of a system nate solution by Gauss-Se nant Eigen value and Eigen tive method. Inverse of a	eidel method. envector. square matrix b

1	sessions + 1 repetition class + 1 Lab Assessment         2D plots for Cartesian and polar curves
2	Finding angle between polar curves, curvature and radius of curvature of a given curve
3	Finding partial derivatives, Jacobian and plotting the graph
4	Applications to Maxima and Minima of two variables
5	Solution of first-order differential equation and plotting the graphs / Solutions of Second-order ordinary
-	differential equations with initial/boundaryconditions
6	Program to compute surface area, volume and centre of gravity
7	Evaluation of improper integrals
8	Numerical solution of system of linear equations, test for consistency and graphical
	representation
9	Solution of system of linear equations using Gauss-Seidel iteration
10	Compute eigen values and eigenvectors and find the largest and smallest eigen value by
	Rayleigh power method
Sugge	sted software's: Mathematica/MatLab/Python/Scilab
	e outcome (Course Skill Set)
	end of the course the student will be able to:
CO 1	
CO 2	1 1 6
	functions
CO 3	
CO 4	
CO 5	
	eigen values and eigen vectors. Familiarize with modern mathematical tools namely
	MATHEMATICA/ MATLAB/ PYTHON/SCILAB
	sted Learning Resources:
	(Title of the Book/Name of the author/Name of the publisher/Edition and Year)
Гext I	
	<b>B. S. Grewal</b> : "Higher Engineering Mathematics", Khanna publishers, 44th Ed., 2021.
	E. Kreyszig: "Advanced Engineering Mathematics", John Wiley & Sons, 10th Ed., 2018.
	ence Books
	<b>7. Ramana:</b> "Higher Engineering Mathematics" McGraw-Hill Education, 11th Ed.,       2017
	Srimanta Pal & Subodh C. Bhunia: "Engineering Mathematics" Oxford University Press, 3rd Ed.,
2016.	
	N.P Bali and Manish Goyal: "A textbook of Engineering Mathematics" Laxmi
	ublications, 10th Ed., 2022.
	C. Ray Wylie, Louis C. Barrett: "Advanced Engineering Mathematics" McGraw – Hill Book Co.,
	ork, 6th Ed., 2017.
	Gupta C.B, Sing S.R and Mukesh Kumar: "Engineering Mathematic for Semester I and II", Mc-Graw
	lucation(India) Pvt. Ltd 2015.
	<b>I. K. Dass and Er. Rajnish Verma:</b> "Higher Engineering Mathematics" S. Chand
	Publication, 3rd Ed., 2014.
	<b>Tames Stewart:</b> "Calculus" Cengage Publications, 7th Ed., 2019.
	David C Lay: "Linear Algebra and its Applications", Pearson Publishers, 4th Ed., 2018. Gareth Williams: "Linear Algebra with applications", Jones Bartlett Publishers Inc., 6th
9. 9	, 2017.

Course Title:	Course Title: Chemistry for Electrical and ElectronicsEngineering stream								
Course Code:	22CHEE12/22	CIE Marks	50						
Course Type (Theory/Practical/Integrated)	Integrated	SEE Marks	50						
		Total Marks	100						
Teaching Hours/Week (L:T:P: S) <sup>1</sup>	2:2:2:0	ExamHours	03+02						
Total Hours of Pedagogy	40 hours Theory + 10to12 Lab slots	Credits	04						
MODULE 1: Chemistry of Polymers	and Electronic Materials (8hr)								
Conducting polymers – synthesis and com- Fibers: Introduction, synthesis, properties a Plastics: Introduction, synthesis, propertie Teflon. Self-learning: Biodegradable polymer: Intr MODULE 2: Energy Con	and industrial applications of Kevlar ar and industrial applications of poly(	methyl methacrylate)							
Batteries: Introduction, classification of b batteries; Na-ion battery, Zn-air, Ni-MH, so Fuel Cells: Introduction, construction, wo Polymer electrolyte membrane (PEM) fuel Chemical Fuels: Introduction, calorific va problems on GCV and NCV. Self-learning: Electrodes for electrostatic Hybrid capacitor.	blid state battery (Li-polymer battery) a rking and applications of methanol–o cell. lue, determination of calorific value	nd Li-ion battery. xygen and using bombcalorimete							
MODULE 3: Corrosion Science and E-w	aste Management (8hr)								
<b>Corrosion Chemistry:</b> Introduction, elec differential aeration. Corrosion control - g corrosion (EMF, Temperature, pH, relative	alvanization, anodization and sacrific	ial anode method. Fac							

**E-waste Management**: Introduction, sources, types, effects of e-waste on environment and human health, methods of disposal, advantages of recycling. Extraction of gold from E-waste.

**PCB:** Electroless plating – Introduction, Electroless plating of copper in the manufacture of PCB.

Self-learning: Recycling of PCB and battery components

Module-4: Water technology and Nanotechnology (8 hr)

**Water technology:** Introduction, sources and nature of impurities of water, hardness of water, determination of temporary, permanent and total hardness by EDTA method, numerical problems, softening of water by Lime-Soda Process, determination of COD, numerical problems. Purification of water by Reverse osmosis and chlorination methods.

**Nanotechnology:** Introduction, properties and engineering application of carbon nanotubes, graphene and nanomaterials for water treatment(metal oxide).

Self-learning: Introduction, classification, properties and application of silicon carbide.

#### MODULE 5: Electrode System in Analytical Techniques (8hr)

**Electrode System**: Introduction, types of electrodes. Ion selective electrode – definition, construction, working and applications of glass electrode. Determination of pH using glass electrode. Reference electrode - Introduction, calomel electrode – construction, working and applications of calomel electrode. Concentration cell – Definition, construction and Numerical problems.

**Analytical Techniques**: Introduction, principle and instrumentation of Colorimetric sensors; its application in the estimation of copper, Potentiometric sensors; its application in the estimation of iron, Conductometric sensors; its application in the estimation of weak acid.

**Self-learning:** IR and UV- Visible spectroscopy.

#### PRACTICAL MODULE

<u> A – Demonstration (any two) offline/virtual:</u>

A1. Synthesis of polyurethane

A2. Determination of strength of an acid in Pb-acid batteryA3. Synthesis of iron oxide

nanoparticles

A4. Électroplating of copper on metallic objects

B – Exercise (compulsorily any 4 to be conducted):

B1.Conductometric estimation of acid mixture

B2. Potentiometric estimation of FAS using K2Cr2O7

B3. Determination of pKa of vinegar using pH sensor (Glass electrode)

B4. Determination of rate of corrosion of mild steel by weight loss methodB5.Estimation of total hardness of water by EDTA method

C – Structured Enquiry (compulsorily any 4 to be conducted): C1. Estimation of Copper present in electroplating effluent by optical sensor (colorimetry)C2. Determination of Viscosity coefficient of lubricant (Ostwald's viscometer) C3. Estimation of iron in TMT bar by diphenyl amine/external indicator method C4. Estimation of Sodium present in soil/effluent sample using flame photometry C5. Determination of Chemical Oxygen Demand(COD) of industrial waste water sample D – Open Ended Experiments (any two): D1. Estimation of metal in e-waste by optical sensorsD2. Electroless plating of Nickle on Copper D3. Determination of glucose by electrochemical sensors D4. Synthesis of polyaniline and its conductivity measurement CO1. Identify the terms and applications processes involved in scientific and engineering CO2. Explain the phenomena of chemistry to describe the methods of engineering processes CO3. Solve for the problems in chemistry that are pertinent in engineering applications CO4. Apply the basic concepts of chemistry to explain the chemical properties and processes CO5. Analyze properties and multidisciplinary situations processes associated with chemical substances in Suggested Learning Resources: Books (Title of the Book/Name of the author/Name of the publisher/Edition and Year) 5. Wiley Engineering Chemistry, Wiley India Pvt. Ltd. New Delhi, 2013- 2nd Edition. 6. Engineering Chemistry, Satyaprakash& Manisha Agrawal, Khanna Book Publishing, Delhi A Text Book of Engg. Chemistry, Shashi Chawla, Dhanpat Rai & Co. (P) Ltd. 7. 8. Essentials of Physical Chemistry, Bahl&Tuli, S.Chand Publishing 29. Applied Chemistry, Sunita Rattan, Kataria 5. Engineering Chemistry, Baskar, Wiley 30. Engineering Chemistry – I, D. GrourKrishana, Vikas Publishing 31. A Text book of Engineering Chemistry, SS Dara & Dr. SS Umare, S Chand & Company Ltd., 12<sup>th</sup>Edition, 2011. 32. A Text Book of Engineering Chemistry, R.V. Gadag and Nityananda Shetty, I. K. International Publishing house. 2<sup>nd</sup> Edition, 2016. 33. Text Book of Polymer Science, F.W. Billmeyer, John Wiley & Sons, 4th Edition, 1999. 34. Nanotechnology A Chemical Approach to Nanomaterials, G.A. Ozin& A.C. Arsenault, RSCPublishing, 2005. 35. Corrosion Engineering, M. G. Fontana, N. D. Greene, McGraw Hill Publications, New York, 3rd Edition, 1996. 36. Linden's Handbook of Batteries, Kirby W. Beard, Fifth Edition, McGraw Hill, 2019. 37. OLED Display Fundamentals and Applications, TakatoshiTsujimura, Wiley-Blackwell, 2012 **38.** Supercapacitors: Materials. Systems. and Applications. Max Lu, Francois Beguin, ElzbietaFrackowiak, Wiley-VCH; 1st edition, 2013. 39. "Handbook on Electroplating with Manufacture of Electrochemicals", ASIA PACIFIC BUSINESSPRESS Inc., 2017. Dr. H. Panda, 40. Expanding the Vision of Sensor Materials. National Research Council 1995, Washington, DC: TheNational Academies Press. doi: 10.17226/4782. 41. Engineering Chemistry, Edited by Dr. Mahesh B and Dr. Roopashree B, Sunstar Publisher, Bengaluru, ISBN 978-93-85155-70-3, 2022 42. High Performance Metallic Materials for Cost Sensitive Applications, F. H. Froes, et al. John Wiley& Sons, 2010 43. Instrumental Methods K. R. Mahadik and Dr. L. of Analysis, Dr. Sathiyanarayanan, NiraliPrakashan, 2020 44. Principles of Instrumental Analysis, Douglas A. Skoog, F. James Holler, Stanley R. Crouch SeventhEdition, Cengage Learning, 2020 45. Polymer Science, V R Gowariker, N V Viswanathan, Jayadev, Sreedhar, Newage Int. Publishers,4th Edition, 2021 46. Engineering Chemistry, PC Jain & Monica Jain, Dhanpat Rai Publication, 2015-16<sup>th</sup> Edition. 47. Nanostructured materials and nanotechnology, Hari Singh, Nalwa, academic press, 1<sup>st</sup> Edition, 2002. 48. Nanotechnology Principles and Practices, Sulabha K Kulkarni, Capital Publishing Company, 3rd Edition 2014 49. Principles of nanotechnology, Phanikumar, Scitech publications, 2<sup>nd</sup> Edition, 2010. 50. Chemistry for Engineering Students, B. S. Jai Prakash, R. Venugopal, Sivakumaraiah& PushpaIyengar., Subash Publications, 5<sup>th</sup> Edition, 2014 51. "Engineering Chemistry", O. G. Palanna, Tata McGraw Hill Education Pvt. Ltd. New Delhi, FourthReprint, 2015. 52. Chemistry of Engineering materials, Malini S, K S Anantha Raju, CBS publishers Pvt Ltd., Laboratory Manual Engg. Chemistry, Anupma Rajput, Dhanpat Rai & Co.

Course Title:		<b>COMPUTER AIDED</b>	ENGINEERING DRAWING	
Course Code		22CED13/23	CIE Marks	50
Teaching Hour/Week (L:	Γ:P:S)	2:0:2:0	SEE Marks	50
Total Hours of Teaching -	Learning	40	Total Marks	100
Credits		03	Exam Hours	03
		Module-1		
Scales. Introduction to O 2D/3D environment. See polylines, square, rectan chamfer, fillet and curves <b>Orthographic Projection</b> Introduction to Orthogra- projections of lines (Place Orthographic projections First quadrant only using <i>Application on projection</i> <b>Orthographic Projection</b>	ring drawing, BIS Conv Computer Aided Draftin lection of drawing shee ogle, polygons, splines, s. <b>ns of Points, Lines and</b> aphic projections: Orthough ed in First quadrant only of planes viz triangle, so change of position meth <i>ns of Lines &amp; Planes (Fer</i> <b>n of Solids:</b> of right regular solids (S	entions of Engineering D g software, Co-ordinate t size and scale. Comm circles, ellipse, text, mo Planes: ographic projections of p ). uare, rectangle, pentagon od). or CIE only) Module-2	Drawing, Free hand sketching of eng system and reference planes HP, VI ands and creation of Lines, coordin ve, copy, off-set, mirror, rotate, trin points in 1st and 3rd quadrants. O , hexagon, and circular laminae (Place ly): Prisms & Pyramids ( square, per <u>CIE and SEE</u> ).	P, RPP & LPP o nate points, axes m, extend, break rthographic ed in
projection of combination Conversion of simple is Problems on applications Introduction to drawing	ometric drawings into o of Isometric projections	of simple objects / engine nent (For CIE only).	eering components.	
		Module-4		
<b>Development of Lateral</b> Development of lateral su Development of lateral su	urfaces of right regular p	and truncations.	s and cones resting with base on HP o	nly.
		Module-5		
Simple Mechanisms; Bi Electric Wiring and lig system using suitable sof Basic Building Drawing Auto CAD or suitable so Electronics Engineering	True free hand, Guided cycles, Tricycles, Gear tr <b>hting diagrams;</b> Like, tware <b>;</b> Like, Architectural floo ftware, <b>; Drawings</b> - Like, Simpl Column chart, Pie chart he student will be able to nicate the objects with de aw the shape and size of	Free hand, Roads, Buildi ains, Ratchets, two-wheel Automatic fire alarm, Ca or plan, basic foundation o e Electronics Circuit Drav , Line charts, Gantt charts o: finite shape and dimension		sions etc bower distribution lges,trusses using
CO 4. Create a Drawing	views using CAD softwa		ough its graphical representation.	

Course Title:		Introduction to C Pro	ogramming		
Course Code:		22ESC145/245	CIE Marks	50	
Course Type (Theory/Practical		Integrated	SEE Marks	50	
/Integrated )		Integrated	Total Marks	100	
Teaching Hours/Week (L:T:P: S)		2:0:2	Exam Hours	03	
Total Hours of Peda		40 hours	Credits	03	
	0.01	ODULES	cicuits	TeachingHours	
		lodule-I		TeachingHours	
	harts, Introduction to C: A	lgorithms, Flowcharts, Basi	c Structure of C Program,		
0 1 0	gram, Constants, Variables and	21		8 hours	
	ressions, Managing Input/ O				
1 0	nt operators, increment/ decrem				
	valuation of expression, pre				
expression, operator	precedence and associativity.	Formatied Input and Output.	Examples & exercises.		
Desision making of	Module-II ad branching: Decision Mak	ing with if statement Simpl	a if statement the if also		
	nd branching: Decision Mak s, the else if ladder, Switch			8 hours	
Statements.	, the else if ladder, Switch	i statement, The ? : opera	tor, Uncontinuonal control	o nours	
	nd Looping: While statement	nt Do-While statement For	r statement jumps in loop		
Examples & exercise		in, Do-white statement, Fol	i statement, jumps in 100p.		
Examples & exercise	Module-III				
Arrays One dime		Initialization Two dimens	sional Arrays declaration		
	<b>Arrays:</b> One dimensional Array, declaration, Initialization, Two dimensional Arrays declaration, Initialization, examples and exercises.				
Strings: Declaring and Initializing String Variables, Reading Strings from Terminal, Writing strings to					
	Deperations on Characters, Strin				
Sereen, r munieue e	Module -IV		ies and exciteises.		
Functions and Rec		ned Functions. A multi-func	ction program. Elements of		
<b>Functions and Recursion :</b> Need for User-defined Functions, A multi-function program, Elements of User-defined Functions, Definition of functions, Return value and their types, Function calls, Function				8 hours	
declaration, Category of functions, Recursion, examples and exercises.					
	ons: Defining a Structures, D		bles, Accessing Structure		
	Initialization, Copying and co				
	ructures <b>Unions</b> : Union, Size of				
		odule-V	•		
Pointers: Introduction	on, Understanding pointers, A	Accessing the address of a va	ariable, Declaring pointer		
variables, Initializing	g of pointer variables, accessir	ng a variable through its poin	nter, pointer expressions,	8 hours	
Examples & exercise					
File Management: Defining and opening a file, closing file, input, output operations on files, error					
handling during I/O	operations. Examples & exerci	ises.			
Text book:					
10. E. Balagurusan	ny, "Programming in ANSI C"	, Tata Mcgraw Hill Education	n Private Limited– VEdition,	2016	
<b>Reference books:</b>					
11.Herbert Schildt,	"Complete Reference in C",F	ourth Edition, Tata McGraw	Hill Publication, 2017		
12. Yashwant P. Kanetakar, "Let us C", Fifth Edition, BPB Publications, 2016.					
13.Brian W Kernighan & Dennis M Ritchie "The C Programming Language", Prentice HallPublisher,					
Second Edition,	5			,	
	ouzan and Richard F.Gilberg,"	Computer Program: A structu	red programmingApproach U	Jsing C.",	
	homson Learning, 2005.	1		0 ,	
Course outcome (C					
	ourse the student will be able t	0:			
CO1 Develop Algorithm and flowcharts and understand the different data types and Operators in C language					
CO2       Identify and use proper decision /control constructs for solving differenttype of problems					
	CO3       Apply arrays and Strings functions to develop programs for a given problem.				
	arrays and Strings fun	nctions to develop pro	ograms for a given problem.		
CO3 Apply	· · ·	* *	* * *		
CO3 Apply CO4 Demon	arrays and Strings fun istrate the use of structures and p C program for real world pro-	apply modular programming	concepts		

**Practice Programs:** 1.Write a C program using printf statement: a) Print your name and Address. b) Print the pattern: 2.Write a C Program using Scanf statements a) Read int, char and float values from the keyboard and display the same. 3.Write a c program to find : i) Area of rectangle ii) Area of Square iii) Area of circle 4. Write a c program using if, if...else, nested if and else...if ladder. i) To find whether number is odd or even. ii) To find whether number is +ve or -ve. iii) To find largest of two numbers. iv) To find largest of three numbers. 5. Write a c program using while , do-while and for looping statement. i) Print 1 to 10 numbers using all the three looping statements. 6. Write a c program using arrays: i) Read 1 to 10 array elements and display the same. ii) Read float elements and display the same. iii) Read character and display the same. 7. Write c program using strings: i. Read a string from keyboard and display the same. **Programming Assignments:** 31. C Program to find Mechanical Energy of a particle using  $E = mgh+1/2 mv^2$ . 32. C Program to convert Kilometers into Meters and Centimeters. 33. C Program To Check the Given Character is Lowercase or Uppercase or Special Character. 34. Program to balance the given Chemical Equation values x, y, p, q of a simple chemical equation of the type: The task is to find the values of constants b1, b2, b3 such that the equation is balanced on both sides and it must be the reduced form 35. Implement Matrix multiplication and validate the rules of multiplication. 36. Compute  $\sin(x)/\cos(x)$  using Taylor series approximation. Compare you result with the built-in library function. Print both the results with appropriate inferences. 37. Sort the given set of N numbers using Bubblesort. 38. Write functions to implement string operations such as compare, concatenate, string length. Convince the parameter passing techniques. 39. Implement structures to read, write and compute average-marks and the students scoring above and below the average marks for a class of N students.

# 40. Develop a program using pointers to compute the sum, mean and standard deviation of all elements stored in an array of N real numbers

		Communicative English		
Sub	ject code	22ENG16	Credit: 0	1
	rs/Week:	1 hour. (Theory)	SEE: 50 Marks	
Total	hours: 15	CIE: 50 Marks	SEE: 1.5 hour	'S
		MODULES		TeachingHours
		Module-I		
English, Proce levels in Comm		<b>nglish :</b> Communicative English, Fundame Barriers to Effective Communicative Engl unication Skills.		3 hours
		Module-II		
consonants and Accent, Stress S	vowels, Sounds Mispro Shift and	c Transcription, English Pronunciation, Pro onounced, Silent and Non silent Letters, Sylla	bles and Structure. Word	3 hours
Intonation, Spe	lling Rules and Words	often Misspelt. Common Errors in Pronuncia	ion.	
Grammar and Parts of Speech	n, Articles and Preposit	Module-III rammar and Vocabulary PART - I :C ion. Question Tags, One Word Substitutes, S Types of Vocabulary – Exercises on it.	-	3 hours
Rasic English	Communicative Gra	Module -IV mmar and Vocabulary PART - II:Words	formation - Prefixes and	
Suffixes,	<b>Basic English Communicative Grammar and Vocabulary PART - II:</b> Words formation - Prefixes and Suffixes			
Contractions and Abbreviations. Word Pairs (Minimal Pairs) – Exercises, Tense and Types of tenses, The				3 hours
		enses) and Exercises on it.	JI III JI	
		Module-V		
<b>Communication Skills for Employment :</b> Information Transfer:Oral Presentation and its Practice. Difference between Extempore/Public Speaking, Communication Guidelines. Mother Tongue Influence (MTI), Various Techniques for Neutralization of Mother Tongue Influence. Reading and Listening Comprehensions – Exercises. <b>Self-learning: Abrasives:</b> Introduction, classification, properties and application of silicon carbide				3 hours
(carborandum).				
Text book:				
10) A Te	-	Sanjay Kumar & Pushp Lata, Oxford Univers nguage Communication Skills, (ISBN-978- 1ru - 2022.	-	
Reference bo				
India	Pvt Limited [Latest Re	by Gajendra Singh Chauhan and Et al, (ISB evised Edition] - 2019. I.P.Sudharshana and C.Savitha, Cambridge U		ngage learning
0	6	inication Skills – Lab Manual cum Workb	2	ia Pyt I imited
-	0 0	ISBN-978-93-86668-45-5), 2019.	congage rearining ind	
		glish – D Praveen Sam, KN Shoba, Cambrid	lge University Press – 2020	).
		Michael Swan, Oxford University Press – 20		
	me (Course Skill Set)	· · · · · · · · · · · · · · · · · · ·		
		tive English (22ENG16) the student will be	able to:	
	Understand and apply the Fundamentals of Communication Skills in their communication skills.			
CO2 Id	Identify the nuances of phonetics, intonation and enhance pronunciation skills.			
		grammar and essentials of language skills as		
		pes of English vocabulary and language prof	iciency.	
CO5 A	dopt the Techniques of	Information Transfer through presentation.		

	Indian Constitution		
Subject code	22ICO17/27	Credit: 0	)1
Hours/Week:	1 hour. (Theory)	SEE: 50 Marks	
Total hours: 15	CIE: 50 Marks	SEE: 1 hours	
	MODULES		TeachingHours
	Module-I		
Indian Constitution: Necessity of th	e Constitution, Societies before and afte	r the Constitution adoption.	
Introduction to theIndian constitution	, Making of the Constitution, Role of the C	Constituent Assembly.	3 hours
	Module-II		
Salient features of India Constitu	ation. Preamble of Indian Constitution	& Key concepts of the	
Preamble. Fundamental Rights (FR'	s) and its Restriction and limitations in d	ifferent Complex Situations.	3 hours
building.			
	Module-III		
	Policy (DPSP's) and its present rele		
	and significance in Nation, Union Execu	tive: Parliamentary System,	3 hours
Union Executive – President, Prim			
	Module -IV		
	entary Committees, Important Parliament		
System of India, Supreme Court of In	ndia and other Courts, Judicial Reviews and	d Judicial Activism.	3 hours
	Module-V		
	M, State Cabinet, Legislature - VS &		21
Elections & Electoral Process. Amendment to Constitution, and Important Constitutional Amendments till			3 hours
today. Emergency Provisions. <b>Text boo</b> k:			
	or Competitive Exams) - Published	hu Naidhmuua Edutach Las	ming Solutions
Bengaluru. – 2022.	or Competitive Exams) - Published	by Naturruva Edutech Lea	ming Solutions,
6	cution of India", (Students Edition.) by	Durga Das Basu (DD Basu	). Prentice _Hall
2008.	dution of mula, (Students Lution.) by	Durga Das Dasu (DD Dasu	). I tentice –Itali,
Reference books:			
	rofessional Ethics and Human Rights" b	y Shubham Singles Charles F	Haries andet
	Learning India, Latest Edition – 2019.	j Shabhain Singles, Charles L	. Hunos, under
1 00	lia" by Merunandan K B: published by M	erugu Publication Second Ed	lition
Bengaluru.		erugu i ucheulon, secona Le	
•	Students & Youths by Justice HN Nagar	nohan Dhas, Sahayana, kero	ekon.
	an, V.S.Senthilkumar, "Engineering Ethic	· •	
Course outcome (Course Skill Set)		, 100000 1100, 2001.	
At the end of the course the student			
	ture of Indian Constitution.		
	mental Rights, DPSP's and Fundamental D	uties (FD's) of our constitution	n.
	Government, political structure & codes, pr		-
	xecutive & Elections system of India.		

Subject and	Scientific Foundations of Healt 22SFH18/28		1
Subject code Hours/Week:	1 hour. (Theory)	Credit: 0 SEE: 50 Marks	
Total hours: 15	CIE: 50 Marks	SEE: 50 Marks	•
Total hours. 15	MODULES	SEE. 1 Hours	TeachingHour
	Module-I		reachingfiour
of Health, Health beliefs, Advantage	<b>positive mindset:</b> Health -Importance of es of good health, Health & Behavior, H hological disorders-Methods to improve	lealth & Society, Health &	3 hours
Nutritional guidelines for good hea	<b>Module-II</b> etter future: Developing healthy diet for g alth, Obesity & overweight disorders an lth, Wellness and physical function, How to	nd its management, Eating	3 hours
Education, the value of relationship	<b>Module-III</b> <b>lationships :</b> Building communication skil and communication skills, Relationships of life (more than a biology), Changing	for Better or worsening of	3 hours
	Module -IV		
avoiding of addictions, How addicti	<b>S:</b> Characteristics of health compromising ion develops, Types of addictions, influer and non addictive people & their behaviors s.	ncing factors of addictions,	3 hours
	Module-V		
infections, How to reduce risks fo Management of chronic illness for (	seases for good health: How to protect or good health, Reducing risks & coping Quality of life, Health & Wellness of youth	g with chronic conditions,	3 hours
future, Measuring of health & wealth <b>Text book</b> :	status.		
University Website. 14. "Scientific Foundations o Bangalore – 2022.	of Health" – Study Material Prepared by of Health", (ISBN-978-81-955465-6-5) pub extbook, FOURTH EDITION by Jane Ogd Press.	blished by Infinite Learning So	olutions,
Reference books:			
<ol> <li>Health Psychology (Secon Published by Routledge 71</li> <li>HEALTH PSYCHOLOG Angeles, McGraw Hill Educ</li> <li>SWAYAM / NPTL/ MOC</li> <li>Scientific Foundations of</li> </ol>	nd edition) by Charles Abraham, Mark C 1 Third Avenue, New York, NY 10017. <b>Y (Ninth Edition)</b> by SHELLEY E. TA cation (India) Private Limited - Open Unive <b>DCS/ We blinks/ Internet sources/ YouTu</b> <b>Health (Health &amp; Welness) - General E</b> prs and published by the reputed publisher.	YLOR - University of Calif ersity Press. <b>be videos</b> and other materials	ornia, Los / notes.
Course outcome (Course Skill Set)			
At the end of the course the student	will be able to:		
CO1 T	yse about Health and wellness (and its Beli		e mindset.
CO1 To understand and analy	estyles for good health for their better future		
CO2 Develop the healthy life			
CO2Develop the healthy lifeCO3Build a Healthy and carCO4To learn about Avoiding	ing relationships to meet the requirements on a risks and harmful habits in their campu	<u> </u>	r their bright
CO2Develop the healthy lifeCO3Build a Healthy and carCO4To learn about Avoidir future.	ing relationships to meet the requirements o	is and outside the campus fo	r their bright

(Fra	om the academic year 2022	2-23)		
Course Code	22MATE21	CIE Marks	50	
Credits	04	SEE Marks	50	
Course Type	Integrated			
Contact Hours/Week (L-T-P)	2-2-2	Total Marks	100	
Contact Hours of Pedagogy	42 hours Theory	Exam Hours	03	
contact hours of heudboby	+10 Lab slots	Examinours	00	
<ul> <li>Engineering stream (22MATE21) is t</li> <li>Familiarize the importance of Interand electrical engineering.</li> <li>Analyze electronics and electrical Equations.</li> <li>Develop the knowledge of solving elenumerically.</li> </ul>	egral calculus and Vecto engineering problems b	y applying Partial D		l
divergence - physical interpretation, sol <b>Vector Integration:</b> Line integrals, Sur flux. Statement of Green's theorem and	rface integrals. Applicat	ions to work done b		and
Applications: Conservation of laws, El (RBT Levels: L1, L2 and L3)	lectrostatics, Analysis of		-	
Applications: Conservation of laws, El (RBT Levels: L1, L2 and L3) Module-2 Vector Sj Importance of Vector Space and Line applications.	ectrostatics, Analysis of pace and Linear Trans ear Transformations in	formations 1 the field of EC &	(6L+2 EE engin	2T) eering
Applications: Conservation of laws, El (RBT Levels: L1, L2 and L3) Module-2 Vector Sj Importance of Vector Space and Line applications. Vector spaces: Definition and example	ectrostatics, Analysis of pace and Linear Trans ear Transformations in	formations 1 the field of EC &	(6L+2 EE engin	2T) eering
Applications: Conservation of laws, El (RBT Levels: L1, L2 and L3) Module-2 Vector Sj Importance of Vector Space and Line applications. Vector spaces: Definition and example sets, Basis and dimension.	ectrostatics, Analysis of pace and Linear Trans ear Transformations in es, subspace, linear span	formations <b>a the field of EC &amp;</b> , Linearly independe	(6L+2 EE engin ent and dej	2T) eering penden
Applications: Conservation of laws, El (RBT Levels: L1, L2 and L3) Module-2 Vector Spi Importance of Vector Space and Line applications. Vector spaces: Definition and example sets, Basis and dimension. Linear transformations: Definition and	ectrostatics, Analysis of pace and Linear Trans ear Transformations in es, subspace, linear span id examples, Algebra of	formations the field of EC & , Linearly independent transformations, Mathematics	(6L+2 EE engin ent and dep atrix of a l	2T) eering penden inear
Applications: Conservation of laws, El (RBT Levels: L1, L2 and L3) Module-2 Vector SJ Importance of Vector Space and Line applications. Vector spaces: Definition and example sets, Basis and dimension. Linear transformations: Definition and transformation. Change of coordinates, Inner product spaces and orthogonality.	ectrostatics, Analysis of pace and Linear Trans ear Transformations in es, subspace, linear span id examples, Algebra of Rank and nullity of a lin	formations the field of EC & , Linearly independent transformations, Manear operator, Rank-	(6L+2 EE engine ent and dep atrix of a l Nullity th	2T) eering penden inear
Module-2 Vector Sp Importance of Vector Space and Line applications. Vector spaces: Definition and example sets, Basis and dimension. Linear transformations: Definition and transformation. Change of coordinates, Inner product spaces and orthogonality. Self-study: Angles and Projections. Ro Applications: Image processing, AI &	ectrostatics, Analysis of pace and Linear Trans ear Transformations in es, subspace, linear span id examples, Algebra of Rank and nullity of a lin	formations the field of EC & , Linearly independent transformations, Manear operator, Rank- action and expansion	(6L+2 EE engin ent and dep atrix of a 1 Nullity th	2T) eering penden inear
Applications: Conservation of laws, El (RBT Levels: L1, L2 and L3) Module-2 Vector SJ Importance of Vector Space and Line applications. Vector spaces: Definition and example sets, Basis and dimension. Linear transformations: Definition and transformation. Change of coordinates, Inner product spaces and orthogonality. Self-study: Angles and Projections. Ro Applications: Image processing, AI & (RBT Levels: L1, L2 and L3)	ectrostatics, Analysis of pace and Linear Trans ear Transformations in es, subspace, linear span id examples, Algebra of Rank and nullity of a lin tation, reflection, contra ML, Graphs and networ	formations the field of EC & , Linearly independent transformations, Manear operator, Rank- action and expansion	(6L+2 EE engine ent and dep atrix of a l Nullity th a. ics.	2T) eering penden inear eorem.
Applications: Conservation of laws, El (RBT Levels: L1, L2 and L3) Module-2 Vector Sp Importance of Vector Space and Line applications. Vector spaces: Definition and example sets, Basis and dimension. Linear transformations: Definition and transformation. Change of coordinates, Inner product spaces and orthogonality. Self-study: Angles and Projections. Ro Applications: Image processing, AI & (RBT Levels: L1, L2 and L3) Module-3 L	ectrostatics, Analysis of pace and Linear Trans ear Transformations in es, subspace, linear span id examples, Algebra of Rank and nullity of a lin tation, reflection, contra ML, Graphs and networ aplace Transform	formations the field of EC & , Linearly independent transformations, Manear operator, Rank- action and expansion the computer graph	(6L+2 EE engin ent and dep atrix of a 1 Nullity th	2T) eering penden inear eorem.
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### Module-4 Numerical methods -1

(5L+3T)

# Importance of numerical methods for discrete data in the field of EC & EE engineering applications.

Solution of algebraic and transcendental equations: Regula-Falsi method and Newton-Raphson method (only formulae). Problems.

Finite differences, Interpolation using Newton's forward and backward difference formulae, Newton's divided difference formula and Lagrange's interpolation formula (All formulae without proof). Problems.

Numerical integration: Trapezoidal, Simpson's (1/3)rd and (3/8)th rules (without proof). Problems. Self-Study: Bisection method, Lagrange's inverse Interpolation, Weddle's rule.

Applications: Estimating the approximate roots, extremum values, Area, volume and surface area. (RBT Levels: L1, L2 and L3)

Module-5 Numerical methods -2

(5L+3T)

# Introduction to various numerical techniques for handling EC & EE applications. Numerical Solution of Ordinary Differential Equations (ODEs):

Numerical solution of ordinary differential equations of first order and first degree – Taylor's series method, Modified Euler's method, Runge-Kutta method of fourth order and Milne's predictor corrector formula (No derivations of formulae). Problems.

**Self-Study:** Adam-Bashforth method.

Applications: Estimating the approximate solutions of ODE for electric circuits.

(RBT Levels: L1, L2 and L3

List of Laboratory experiments (2 hours/week per batch/ batch strength 15) 10 lab sessions + 1 repetition class + 1 Lab Assessment

1	
I	Finding gradient, divergent, curl and their geometrical interpretation and Verification of
	Green's theorem
2	Computation of basis and dimension for a vector space and Graphical representation of
	linear transformation
3	Visualization in time and frequency domain of standard functions
4	Computing inverse Laplace transform of standard functions
5	Laplace transform of convolution of two functions
6	Solution of algebraic and transcendental equations by Regula-Falsi and Newton-Raphson
	method
7	Interpolation/Extrapolation using Newton's forward and backward difference formula
8	Computation of area under the curve using Trapezoidal, Simpson's $(1/3)$ rd and $(3/8)$ th rule
9	Solution of ODE of first order and first degree by Taylor's series and Modified Euler's
	method
10	Solution of ODE of first order and first degree by Runge-Kutta 4th order and Milne's
	predictor-corrector method

Suggested software's: Mathematica/MatLab/Python/Scilab Semester End Examination (SEE):

Theory SEE will be conducted by Institute as per the scheduled timetable, with common question papers for the course (duration 03 hours)

1. The question paper will have ten questions. Each question is set for 20 marks.

2. There will be 2 questions from each module. Each of the two questions under a module (with a

maximum of 3 sub-questions), should have a mix of topics under that module.         3. The students have to answer 5 full questions, selecting one full question from each module.         Course outcome (Course Skill Set)         At the end of the course the student will be able to:         CO 1       Understand the applications of vector calculus refer to solenoidal, irrotational vectors, line integral and surface integral.         CO 2       Demonstrate the idea of Linear dependence and independence of sets in the vector space, and linear transformation         CO 3       To understand the concept of Laplace transform and to solve initial value problems.         CO 4       Apply the knowledge of numerical methods in solving physical and engineering phenomena         CO 5       Get familiarize with modern mathematical tools namely SCILAB/PYTHON/MATLAB         Suggested Learning Resources:       Books (Title of the Book/Name of the author/Name of the publisher/Edition and Year)         Text Books       1. B. S. Grewal: "Higher Engineering Mathematics", John Wiley & Sons, 10h Ed., 2018.         Reference Books       1. V. Ramana: "Higher Engineering Mathematics" McGraw-Hill Education, 11h Ed., 2017         2. Srimanta Pal & Subodh C. Bhunia: "Engineering Mathematics" Oxford University Press, 3td Ed., 2016.       3. NP Bali and Manish Goyal: "A textbook of Engineering Mathematics" McGraw – Hill Book Co., Newyork, 6h Ed., 2017.         5. Gupta C.B, Sing S.R and Mukesh Kumar: "Engineering Mathematics" McGraw – Hill Book Co., Newyork, 6h Ed., 2017.       5. Gupta C.			
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Ed. 2017.			
20, 2027	Ed.,	2017.	

Course Title: Physics forECE & EEE Stream			
Course Code:	22PHYE12/22	CIE Marks	50
Course Type (Theory/Practical/Integrated)	Integrated	SEE Marks	50
		Total Marks	100
Teaching Hours/Week (L:T:P: S)	2:2:2:0	Exam Hours	03
Total Hours of Pedagogy	40 hours+10-12 Lab Slots	Credits	04
	Module-1 (08 Hours)		

Quantum Mechanics:

de Broglie Hypothesis and Matter Waves, de Broglie wavelength and derivation of expression by analogy, Phase Velocity and Group Velocity, Heisenberg's Uncertainty Principle and its application (Non existence of electron inside the nucleus-Non Relativistic), Principle of Complementarity, Wave Function, Time independent Schrödinger wave equation, Physical Significance of a wave function and Born Interpretation, Expectation value, Eigen functions and Eigen Values, Particle inside one dimensional infinite potential well, Waveforms and Probabilities. Numerical Problems

#### Pre-requisite: Wave–Particle dualism

Self-learning: de Broglie Hypothesis

Module-2 (08 hours)

#### Electrical Properties of Solids:

#### Conductors:

Quantum Free Electron Theory of Metals: Assumptions, Fermi-energy, Fermi factor, Variation of Fermi Factor with Temperature and Energy, Mention of expression for electrical conductivity.

**Dielectric Properties:** Polar and non-polar dielectrics, Electrical Polarization Mechanisms, internal fields insolids, Clausius-Mossotti equation (Derivation), Solid, Liquid and Gaseous dielectrics. Application of dielectrics in transformers, Capacitors, Electrical Insulation. Numerical Problems.

#### Superconductivity:

Introduction to Superconductors, Temperature dependence of resistivity, Meissner Effect, Critical Field, Temperature dependence of Critical field, Types of Super Conductors, BCS theory (Qualitative), High Temperature superconductivity, SQUID, MAGLEV, Numerical problems.

#### Pre-requisites: Classical Free Electron Theory

Self-learning: Dielectrics Basics

#### Module-3 (08 hours)

#### Lasers and Optical Fibers:

Lasers: Characteristics of LASER, Interaction of radiation with matter, Expression for Energy Density and its significance. Requisites of a Laser System. Conditions for Laser action. Principle, Construction and Working of Carbon Dioxide Laser. Application of Lasers in Defense (Laser range finder) and Laser Printing. Numerical Problems **Optical Fibers:** Total Internal Reflection, Propagation mechanism, Angle of Acceptance, Numerical Aperture, Fractional Index Change, Modes of Propagation, Number of Modes and V Number, Types of Optical Fibers. Attenuation and Mention of Expression for Attenuation coefficient, Attenuation Spectrum of an Optical Fiber with Optical Windows. Discussion of Block Diagram of Point to Point Communication, Intensity based Fiber Optic Displacement Sensor, Merits and Demerits, Numerical problems.

Pre-requisite: Properties of light

#### Self-learning: Total Internal Reflection

#### Module-4 (08 hours)

#### Maxwell's Equations and EM waves:

**Maxwell's Equations:** Fundamentals of Vector Calculus. Divergence and Curl of Electric field and Magnetic field (static), Gauss' divergence theorem and Stoke's theorem. Description of laws of Electrostatics, Magnetism, Faraday's laws of EMI, Current Density, Equation of Continuity, Displacement Current (with derivation), Maxwell's equations in vacuum, Numerical Problems

**EM Waves**: The wave equation in differential form in free space (Derivation of the equation using Maxwell's equations), Plane Electromagnetic Waves in vacuum, their transverse nature.

### Pre-requisite: Electricity & Magnetism

#### Self-learning: Fundamentals of vector calculus.

Module-5 (08 hours)

#### Semiconductors and Devices:

Fermi level in Intrinsic & Extrinsic Semiconductor, Expression for concentration of electrons in conduction band & holes concentration in valance band (only mention the expression), Relation between Fermi energy & Energy gap in intrinsic semiconductors(derivation), Law of mass action, Electrical conductivity of a semiconductor (derivation),

Hall effect, Expression for Hall coefficient (derivation) and its application. Photo-diode and Power responsivity, Construction and working of Semiconducting Laser, Four probe method to determine resistivity, Phototransistor, Numerical problems.

#### Pre-requisite: Basics of Semiconductors

Self-learning: Fermi level in Intrinsic & Extrinsic Semiconductor

CO1 Describe the fundamental principles of the Quantum Mechanics and the essentials of Photonics.

CO2Elucidate the concepts of conductors, dielectrics and superconductivity

CO3 Discuss the fundamentals of vector calculus and their applications in Maxwell's Equations and EM Waves.

**CO4 Summarize** the properties of semiconductors and the working principles of semiconductor devices.

**CO5 Practice** working in groups to conduct experiments in physics and **Perform** precise and honest measurements.

#### Laboratory Component:

Any Ten Experiments have to be completed from the list of experiments

Note: The experiments have to be classified into

- e) Exercise
- f) Demonstration
- g) Structured Inquiry
- h) Open Ended

Based on the convenience classify the following experiments into above categories selecting at least three experiments for each type. Select at least one simulation/spreadsheet activity.

#### <u>List of Experiments</u>

- 1. Determination of wavelength of LASER using Diffraction Grating.
- 2. Determination of acceptance angle and numerical aperture of the given Optical Fiber.
- 3. Determination of Magnetic Flux Density at any point along the axis of a circular coil.
- 4. Determination of resistivity of a semiconductor by Four Probe Method
- 5. Study the I-V Characteristics of the Given Bipolar Junction Transistor.
- 6. Determination of dielectric constant of the material of capacitor by Charging and Discharging method.
- 7. Study the Characteristics of a Photo-Diode and to determine the power responsivity / Verification ofInverse Square Law of Intensity of Light.
- 8. Study the frequency response of Series & Parallel LCR circuits.
- 9. Determination of Plank's Constant using LEDs.
- 10. Determination of Fermi Energy of Copper.
- 11. Identification of circuit elements in a Black Box and determination of values of the components.
- 12. Determination of Energy gap of the given Semiconductor.
- 13. Step Interactive Physical Simulations.
- 14. Study of motion using spread Sheets
- 15. Study of Application of Statistics using spread sheets
- 16. PHET Interactive
- 17. Determination of frequency of alternating current using Sonometer
- 18. Interference at an Air wedge

Simulations(https://phet.colorado.edu/en/simulations/filter?subjects=physics&type=html,prototype)

Course Title: ELEM	MENTS OF ELECTRICAL ENGINEER	ING	
Course Code	22EEE13/23	CIE	: 50
Number of Lecture Hours/Week	Control Control       Control       Control       Control       Control       Control       Control       Control       Control       Control       Control       Control       Control       Control       Control       Control       Control       Control       Control       Control       Control       Control       Control       Control       Control       Control       Control       Control       Control       Control       Control       Control       Control       Control       Control       Control       Control       Control       Control       Control       Control       Control       Control       Control       Control       Control       Control       Control       Control       Control       Control       Control       Control       Control       Control       Control       Control       Control       Control       Control       Control       Control       Control       Control       Control       Control       Control       Control       Control       Control       Control       Control       Control       Control       Control       Control       Control       Control       Control       Control       Control       Control       Control       Control       Control       Contro       Control       Control		: 50
<b>Total Number of Lecture Hours</b>	Number of Lecture Hours40SEE		Hours: 03
	Modules		Teaching Hours
AC Circuits:	<u>Module - I</u>		
<b>Single Phase Circuits:</b> AC termine Disadvantages of low power factor.	ologies, Analysis of R, L, C, R-L Series cir	cuits,	8hrs
line values.	, types of connections, Relation between phanent of power by VAW method.,3-phase phod for balanced load.		
	Module - II		
<b>Electromagnetism and Single Pha</b>	se Transformer:		
<b>Electromagnetism:</b> Faraday Laws Lenz's law, types of EMF and nume	of Electromagnetic Induction, Fleming's rical.	rules,	8hrs
<b>Transformer:</b> Principle, construction and working of single phase transformer, types (based on construction), EMF equation, losses, (Numerical related to EMF equation and Efficiency)			
Practical Component: efficiency and	Module - III		
DC Machines:			
<b>DC generator:</b> Principle, Construction, working, types and EMF equation. (Numerical on EMF equation)			8hrs
	back emf and its significance, torque equ (Numerical on Torque & Voltage Equations Notor and Starter		
1	Module - IV		
Three Phase AC Machines:			
<b>Alternator:</b> Principle of operation, types and constructional features, EMF equation of alternator.(Excluding the winding factors derivation) Numerical on EMF equation.			8hrs
principle of operation, Star - Delta s	Construction, concept of rotating magnetic starter.(Numerical on Slip calculations only) sformer, Starter for 3 Phase IM and Effe	•	
	<u>Module – V</u>		8hrs
Generation, Tariff, Measuring Ins	struments and Electric Safety:		
Generation of Power: Block sche nuclear and solar power generating s	ematic representation of hydroelectric, the stations (Self study component).	ermal,	
Tariff: Objectives of Tariff, Desirat	ble characteristics of Tariff, Three-part tariff	•	
5	, Construction & working of Dynamometer		

Electric Safety: Necessity of earthing, plate & pipe earthing, Elementary discussion	
on Fuse & MCB.	
Electric Shock, Effects, Remedies & Precautions (Self study component).	
CO1 State, illustrate electric circuit and solving the networks	
CO2 State, illustrate magnetic circuit, solving the networks and identify the parts, expl	ain the
construction, working and examine the performance of Transformer	
CO3 Identify the parts, explain the construction, working and examine the performan	nce of DC
Machines.	
<b>CO4</b> Recognize the parts, give the illustration of construction and compute the performachines.	mance of AC
CO5 Outline the Power Generating stations, analyze the tariff, synthesize the safety n explain the working of measuring instruments.	neasures and
. Reference books:	
1. J P Tiwari," Basic Electrical Engineering", New age Publications, 2nd edition,	2011.
2 Rajendra Prasad "Fundamentals of Electrical Engineering" PHI 3rd edition 20	14

- 2. Rajendra Prasad "Fundamentals of Electrical Engineering", PHI 3rd edition, 2014.
- 3. B L Theraja& A K Theraja" Electrical Technology", Vol 1, 2nd edition.
- 4. B L Theraja& A K Theraja" ABC of Electrical Engineering", 2nd edition.
- 5. D.P. Kothari and Nagrath "Theory and Problems in electrical Engineering", PHI edition 2011.
- 6. V. N. Mittal and Arvind Mittal;, "Basic Electrical Engineering" McGraw Hill.
- R.V. Srinivasa Murthy "Basic Electrical Engineering" Sanguine Technical Publisher2004.

		RONICS ENGINEERI	UU
Subject Code	22ECSC143/243	22BEE13/23	CIE: 50
Number of Lecture Hours/Week	3 (Th	neory)	SEE: 50
Total Number of LectureHours	4	0	SEE Hours: 03
	Module#		Teaching Hours
	Module-1		08 Hours
<b>Power Supplies:</b> Block diagram, Halt resistance and voltage regulation, Voltag <b>Amplifiers:</b> CE amplifier with and with restruction medica	ge multipliers.		
saturation modes.	Module-2		08 Hours
lifferentiator. <b>Dscillators:</b> Barkhausen criterion, sinu- oscillator (using op-amp), Multivibrator oscillators (Only Concepts, working, an	s, Single-stage astable o ad waveforms. No mathe	scillator, Crystal control	led
Boolean Algebra and Logic Circuits	Module-3		08 Hours
Embedded Systems: Definition, Embed Major application areas of Embedded Microprocessor vs Microcontroller, RIS Sensors and Interfacing: Instrumenta Segment LED Display.	Systems, Elements of C vs CISC	f an Embedded System	, Core of the Embedded System
	Module-5		08 Hours
Analog Communication Schemes: Mo Transmitter, Channel or Medium – Har systems. Types of modulation (only con Digital Modulation Schemes: Advanta Radio signal transmission Multiple acce	odern communication syndwired and Soft wired, cepts) – AM, FM, Conc ages of digital commun	Noise, Receiver, Multip cept of Radio wave propa	ion source, and input transduce plexing, Types of communication gation (Ground, space, sky)
<ul> <li>Transmitter, Channel or Medium – Har systems. Types of modulation (only con Digital Modulation Schemes: Advanta Radio signal transmission Multiple acce</li> <li>Text books:</li> <li>Mike Tooley, 'Electronic Circuits https://doi.org/10.4324/978131573</li> <li>Digital Logic and Computer Design D P Kothari, I J Nagrath, 'Basic Electro CO1 Design basic power supply &amp; stud</li> </ul>	odern communication sy dwired and Soft wired, cepts) – AM, FM, Conc ages of digital commun ss techniques. s, Fundamentals & Ap 37980. eBook ISBN978 n, M. Morris Mano, PH onics', 2nd edition, McG by concept of amplifiers.	Noise, Receiver, Multip cept of Radio wave propa dication over analog complications', 4 <sup>th</sup> Edition, 31315737980 2nd I Learning, 2008 ISBN-9 Graw Hill Education (Ind	ion source, and input transduce plexing, Types of communicatio gation (Ground, space, sky) ommunication, ASK, FSK, PSI Elsevier, 2015. DOI 978-81-2030417-84.
<ul> <li>Transmitter, Channel or Medium – Har systems. Types of modulation (only con <b>Digital Modulation Schemes:</b> Advanta Radio signal transmission Multiple acce</li> <li><b>Text books:</b></li> <li>Mike Tooley, 'Electronic Circuits https://doi.org/10.4324/978131573</li> <li>Digital Logic and Computer Design D P Kothari, I J Nagrath, 'Basic Electronic Circuits (Schemes) (Schemes)</li> </ul>	odern communication syndwired and Soft wired, cepts) – AM, FM, Conc ages of digital commun states techniques. s, Fundamentals & Ap 37980. eBook ISBN978 n, M. Morris Mano, PH ponics', 2nd edition, McG ly concept of amplifiers. with its applications & to to construct basic digit	Noise, Receiver, Multip pept of Radio wave propa dication over analog co pplications', 4 <sup>th</sup> Edition, 31315737980 2nd I Learning, 2008 ISBN-9 Graw Hill Education (Ind	ion source, and input transduce plexing, Types of communicatio gation (Ground, space, sky) ommunication, ASK, FSK, PSI Elsevier, 2015. DOI 978-81-2030417-84.
<ul> <li>Transmitter, Channel or Medium – Har systems. Types of modulation (only con Digital Modulation Schemes: Advanta Radio signal transmission Multiple acce</li> <li>Text books:</li> <li>3. Mike Tooley, 'Electronic Circuits https://doi.org/10.4324/978131573</li> <li>4. Digital Logic and Computer Design D P Kothari, I J Nagrath, 'Basic Electro CO1 Design basic power supply &amp; stud CO2 To analyze working of op-amp w</li> <li>CO3 Develop competence knowledge to the system of the system o</li></ul>	odern communication sy dwired and Soft wired, cepts) – AM, FM, Conc ages of digital commun ss techniques. s, Fundamentals & Ap 37980. eBook ISBN978 n, M. Morris Mano, PH pnics', 2nd edition, McG ly concept of amplifiers. with its applications & t to construct basic digit	Noise, Receiver, Multipept of Radio wave propa ication over analog complications', 4 <sup>th</sup> Edition, 31315737980 2nd I Learning, 2008 ISBN-9 Graw Hill Education (Ind to studyoscillators. tal circuit by of Sensor and	ion source, and input transduce plexing, Types of communicatio gation (Ground, space, sky) ommunication, ASK, FSK, PSI Elsevier, 2015. DOI 978-81-2030417-84.

	~	Professional Writing Skills in Eng			
	Subject code	22PWS16/26	Credit: 0		
	Hours/Week: 1 hour. (Theory) SEE: 50 Marks				
To	otal hours: 15	CIE: 50 Marks	SEE: 1 .5hour		
		MODULES		TeachingHour	
		Module-I			
parts of spe	ech, Use of verbs and pl	Writing and Speaking English: Comm rrasal verbs, Auxiliary verbs and their forms	s, Subject Verb Agreement	3 hours	
	ules), Common errors in Vords Confused/Misused	a Subject-verb agreement, Sequence of Tense I.	es and errors identification		
		Module-II			
Introduction writing, Ser	andConclusion, Impor	riting: Organizing Principles of Paragrap tance of Proper Punctuation, Precise writin l Corrections activities. Misplaced modifiers usion of words.	ng and Techniques in Essay	3 hours	
	,	Module-III			
writing, Sig Technical P	nificance of Reports, Ty roposals, Characteristics	<b>Practices:</b> Technical writing process, Introd ypes of Reports. Introduction to Technical I s of Technical Proposals. Scientific Writing or & Sentence Improvement, Cloze Test and 7	Proposals Writing, Types of Process. Grammar – Voices	3 hours	
		Module -IV			
Barriers, In Application	mproving Listening S s, Types of official/emp	Employment: Listening Comprehension, Ty kills. Reading Comprehension, Tips fo ployment/business Letters, Resume vs. Bio	r effective reading. Job	3 hours	
		mails, Blog Writing and Memos.			
		t Workplace: Group Discussion and			
		a GD and PI's, Intra and Interpersonal ation Skills and its importance in GD and I		3 hours	
-		ts, Strategies of Presentation Skills.	interview. Presentation skins	5 nours	
Text bool		is, Strategies of Presentation Skins.			
9) "] 10) "]	Professional Writing S	<b>kills in English"</b> published by Fillip Learnin s per AICTE 2018 Model Curriculum) (ISB) Edition 2019].			
Reference	e books:	-			
22) T	echnical Communicati	v N.P.Sudharshana and C.Savitha, Cambridg on by Gajendra Singh Chauhan and Et al, (IS Revised Edition] - 2019.		ngage learning	
23) T	-	on – Principles and Practice, Third Edition b	y Meenakshi Raman and Sang	eetha Sharma,	
,	8	ammar & Composition by Wren and Martin munication – Second Edition by M Ashraf	· · · ·		
	tcome (Course Skill Se				
At the end	l of the course the studer				
CO1		ntify the Common Errors in Writing and Spe	aking.		
CO2		hnical writing and Presentation skills.			
CO3		posals properly and make them to Write good	d technical reports.		
CO4		and Workplace communication skills.			
CO5		ques of Information Transfer through present			

# ಸಾಂಸ್ಕೃತಿಕ ಕನ್ನಡ - ಕನ್ನಡ ಬಲ್ಲ ಮತ್ತು ಕನ್ನಡ ಮಾತ್ಯಭಾಷೆಯ ವಿದ್ಯಾರ್ಥಿಗಳಿಗೆ ನಿಗದಿಪಡಿಸಿದ ಪಠ್ಯಕ್ರಮ

Subject Code	Subject		Stream	Th– Tut-Pr	Credits
22KSK17 / 27	SAMSKRUTH	IKA KANNADA	Humanities	1 - 0 - 0	01
			and Social		
			Sciences		
			(H.S.S)		
CIE : 50	SEE : 50	SEE : 1 hours 3	0 Minutes		Total :

Course objectives : ಸಾಂಸ್ಕೃತಿಕ ಕನ್ನಡ ಪಠ್ಯ ಕಲಿಕೆಯ ಉದ್ದೇಶಗಳು:

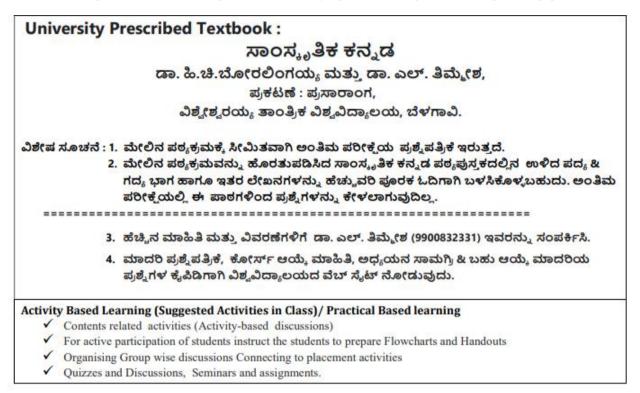
The course (22KSK17/27) will enable the students,

- 1. ಪದವಿ ವಿದ್ಯಾರ್ಥಿಗಳಾಗಿರುವುದರಿಂದ ಕನ್ನಡ ಭಾಷೆ, ಸಾಹಿತ್ಯ ಮತ್ತು ಸಂಸ್ಕೃತಿಯ ಪರಿಚಯ ಮಾಡಿಕೊಡುವುದು.
- 2. ಕನ್ನಡ ಸಾಹಿತ್ಯದ ಪ್ರಧಾನ ಭಾಗವಾದ ಆಧುನಿಕಪೂರ್ವ ಮತ್ತು ಆಧುನಿಕ ಕಾವ್ಯಗಳನ್ನು ಪರಿಚಯಿಸಿವುದು.
- 3. ವಿದ್ಯಾರ್ಥಿಗಳಲ್ಲಿ ಸಾಹಿತ್ಯ ಮತ್ತು ಸಂಸ್ಕೃತಿಯ ಬಗ್ಗೆ ಅರಿವು ಹಾಗೂ ಆಸಕ್ತಿಯನ್ನು ಮೂಡಿಸುವುದು.
- 4. ತಾಂತ್ರಿಕ ವ್ಯಕ್ತಿಗಳ ಪರಿಚಯವನ್ನು ಹಾಗೂ ಅವರುಗಳ ಸಾಧಿಸಿದ ವಿಷಯಗಳನ್ನು ಪರಿಚಯಿಸುವುದು.
- 5. ಸಾಂಸ್ಕೃತಿಕ, ಜನಪದ ಹಾಗೂ ಪ್ರವಾಸ ಕಥನಗಳ ಪರಿಚಯ ಮಾಡಿಕೊಡುವುದು.

	ಘಟಕ -1 ಕನ್ನಡ ಸಂಸ್ಕೃತಿ ಮತ್ತು ಭಾಷೆ ಕುರಿತಾದ ಲೇಖನಗಳು (03 hours of pedagogy)
1.	
2.	ಕರ್ನಾಟಕದ ಏಕೀಕರಣ : ಒಂದು ಅಪೂರ್ವ ಚರಿತ್ರೆ - ಜಿ. ವೆಂಕಟಸುಬ್ಬಯ್ಯ
3.	ಆಡಳಿತ ಭಾಷೆಯಾಗಿ ಕನ್ನಡ - ಡಾ. ಎಲ್. ತಿಮ್ಮೇಶ ಮತ್ತು ಪ್ರೋ. ವಿ. ಕೇಶವಮೂರ್ತಿ
	ಘಟಕ - 2 ಆಧುನಿಕ ಪೂರ್ವದ ಕಾವ್ಯ ಭಾಗ (03 hours of pedagogy)
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
	ಘಟಕ -3 ಆಧುನಿಕ ಕಾವ್ಯಭಾಗ (03 hours of pedagogy)
1.	ಡಿವಿಜಿ ರವರ ಮಂಕುತಿಮ್ಮನ ಕಗ್ಗದಿಂದ ಅಯ್ದ ಕೆಲವು ಭಾಗಗಳು
2.	ಕುರುಡು ಕಾಂಚಾಣ : ದಾ.ರಾ. ಬೇಂದ್ರೆ
3.	ಹೊಸಬಾಳಿನ ಗೀತೆ : ಕುವೆಂಪು
	ಘಟಕ - 4 ತಾಂತ್ರಿಕ ವ್ಯಕ್ತಿಗಳ ಪರಿಚಯ (03 hours of pedagogy)
1.	ಡಾ. ಸರ್. ಎಂ. ವಿಶ್ವೇಶ್ವರಯ್ಯ : ವ್ಯಕ್ತಿ ಮತ್ತು ಐತಿಹ್ಯ – ಎ. ಎನ್. ಮೂರ್ತಿರಾವ್
2.	ಕರಕುಶಲ ಕಲೆಗಳು ಮತ್ತು ಪರಂಪರೆಯ ವಿಜ್ಞಾನ : ಕರೀಗೌಡ ಬೀಚನಹಳ್ಳಿ
	ಘಟಕ - 5 ಸಾಂಸ್ಕೃತಿಕ, ಜನಪದ ಕಥೆ ಮತ್ತು ಪ್ರವಾಸ ಕಥನ (03 hours of pedagogy)
1.	ಯುಗಾದಿ : ವಸುಧೇಂದ್ರ
2.	ಮೆಗಾನೆ ಎಂಬ ಗಿರಿಜನ ಪರ್ವತ : ಹಿ.ಚಿ. ಬೋರಲಿಂಗಯ್ಯ
1	outcome (Course Skill Set)
	ೈತಿಕ ಕನ್ನಡ (22KSK17/27) ಪಠ್ಯ ಕಲಿಕೆಯ ನಂತರ ವಿದ್ಯಾರ್ಥಿಗಳಲ್ಲಿ :
	end of the course the student will be able to:
C01	ಕನ್ನಡ ಭಾಷೆ, ಸಾಹಿತ್ಯ ಮತ್ತು ಕನ್ನಡದ ಸಂಸ್ಕೃತಿಯ ಕುರಿತು ಅರಿವು ಮೂಡಿರುತ್ತದೆ.
C02	ಕನ್ನಡ ಸಾಹಿತ್ಯದ ಆಧುನಿಕ ಪೂರ್ವ ಮತ್ತು ಆಧುನಿಕ ಕಾವ್ಯಗಳನ್ನು ಸಾಂಕೇತಿಕವಾಗಿ ಕಲಿತು ಹೆಚ್ಚಿನ ಓದಿಗೆ
	ಮತ್ತು ಜ್ಞಾನಕ್ಕೆ ಸ್ಪೂರ್ತಿ ಮೂಡುತ್ತದೆ.
CO3	ವಿದ್ಯಾರ್ಥಿಗಳಲ್ಲಿ ಸಾಹಿತ್ಯ ಮತ್ತು ಸಂಸ್ಕೃತಿಯ ಬಗ್ಗೆ ಅರಿವು ಹಾಗೂ ಆಸಕ್ತಿಯನ್ನು ಹೆಚ್ಚಾಗುತ್ತದೆ.
CO4	ತಾಂತ್ರಿಕ ವ್ಯಕ್ತಿಗಳ ಪರಿಚಯ ಹಾಗೂ ಅವರುಗಳ ಸಾಧಿಸಿದ ವಿಷಯಗಳನ್ನು ತಿಳಿದುಕೊಂಡು ನಾಡಿನ ಇನ್ನಿತರ
	ವ್ಯಕ್ತಿಗಳ ಬಗ್ಗೆ ತಿಳಿದುಕೊಳ್ಳಲು ಕೌತುಕತೆ ಹೆಚ್ಚಾಗುತ್ತದೆ.
C05	ಸಾಂಸ್ಕೃತಿಕ, ಜನಪದ ಹಾಗೂ ಪ್ರವಾಸ ಕಥನಗಳ ಪರಿಚಯ ಮಾಡಿಕೊಡುವುದು.

#### Pattern of question paper

3. SEE Paper shall be set for 50 questions, each carrying 1 mark. The pattern of the question paper is MCQ



# ಬಳಕೆ ಕನ್ನಡ - baLake Kannada (Kannada for Usage)

# ಕನ್ನಡ ಕಲಿಕೆಗಾಗಿ <u>ನಿಗದಿ</u>ಪಡಿಸಿದ ಪಠ್ಯಪುಸ್ತಕ - (Prescribed Textbook to Learn Kannada)

Subject Code	Subject	Stream	Th– Tut-Pr	Credits
22KBK17 / 27	BALAKE KAN	NADA Humanities and Social	1 - 0 - 0	01
		Sciences		
		(H.S.S)		
CIE : 50	SEE : 50	SEE : 1 hours 30 Minute	S	Tota

# Course objectives : ಬಳಕೆ ಕನ್ನಡ ಪಠ್ಯ ಕಲಿಕೆಯ ಉದ್ದೇಶಗಳು:

The course (22KBK17/27) will enable the students,

- 1. To Create the awareness regarding the necessity of learning local language for comfortable and healthy life.
- 2. To enable learners to Listen and understand the Kannada language properly.
- 3. To speak, read and write Kannada language as per requirement.
- 4. To train the learners for correct and polite conservation.
- 5. To know about Karnataka state and its language, literature and General information about this state.

# Course outcome (Course Skill Set)

# ಬಳಕೆ ಕನ್ನಡ ಪಠ್ಯ ಕಲಿಕೆಯಿಂದ ವಿದ್ಯಾರ್ಥಿಗಳಿಗೆ ಆಗುವ ಅನುಕೂಲಗಳು ಮತ್ತು ಫಲಿತಾಂಶಗಳು:

At the end of the course the student will be able to:

C01	To understand the necessity of learning of local language for comfortable life.
C02	To speak, read and write Kannada language as per requirement.
CO3	To communicate (converse) in Kannada language in their daily life with kannada speakers.
CO4	To Listen and understand the Kannada language properly.
C05	To speak in polite conservation.

### Module - 1

#### (03 hours of pedagogy)

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

Module - 2	(03 hours of pedagogy)
<ol> <li>ನಾಮಪದಗಳ ಸಂಬಂಧಾರ್ಥಕ ರೂಪಗಳು, ಸಂದೇಹಾಸ್ಪದ ಕ</li> </ol>	ಪ್ರಶ್ನೆಗಳು ಮತ್ತು ಸಂಬಂಧವಾಚಕ
ನಾಮಪದಗಳು - Possessive forms of nouns, dubitive q	uestion and Relative nouns
<ol> <li>ಗುಣ, ಪರಿಮಾಣ ಮತ್ತು ವರ್ಣಬಣ್ಣ ವಿಶೇಷಣಗಳು, ಸಂಖ್ಯಾಪ</li> </ol>	ವಾಚಕಗಳು Qualitative, Quantitative and
Colour Adjectives, Numerals	
3. ಕಾರಕ ರೂಪಗಳು ಮತ್ತು ವಿಭಕ್ತಿ ಪ್ರತ್ಯಯಗಳು ⊸ಸಪ್ತಮಿ ವಿಭಕ್ತಿ ಪ್ರತ್ಯಯ – (ಆ, ಅಂ	ದು, ಅವು, ಅಲ್ಲಿ) –Predictive Forms, Locative Case
Module - 3	(03 hours of pedagogy)
l. ಚತುರ್ಥಿ ವಿಭಕ್ತಿ ಪ್ರತ್ಯಯದ ಬಳಕೆ ಮತ್ತು ಸಂಖ್ಯಾವಾಚಕಗಳು - Dative Case	s, and Numerals
2. ಸಂಖ್ಯಾಗುಣವಾಚಕಗಳು ಮತ್ತು ಬಹುವಚನ ನಾಮರೂಪಗಳು -Ordinal nu	merals and Plural markers
<ol> <li>ನ್ಯೂನ/ನಿಷೇಧಾರ್ಥಕ ಕ್ರಿಯಾಪದಗಳು &amp; ವರ್ಣ ಗುಣವಾಚಕಗಳು – Defecti</li> </ol>	ve/Negative Verbs & Colour Adjectives
Module- 4	(03 hours of pedagogy)
1. ಅಪ್ಪಣೆ / ಒಪ್ಪಿಗೆ, ನಿರ್ದೇಶನ, ಪ್ರೋತ್ಸಾಹ ಮತು ಒತ್ತಾಯ ಆರ್ಥರ	ೊಪ ಪದಗಳು ಮತ್ತು ವಾಕ್ಯಗಳು
Permission, Commands, encouraging and Urging words (Impe	rative words and sentences)
2. ಸಾಮಾನ್ಯ ಸಂಭಾಷಣೆಗಳಲ್ಲಿ ದ್ವಿತೀಯ ವಿಭಕ್ತಿ ಪ್ರತ್ಯಯಗಳು ಮತ	ಟ್ತ ಸಂಭವನೀಯ ಪ್ರಕಾರಗಳು
Accusative Cases and Potential Forms used in General Commun	ication
3. "ಇರು ಮತ್ತು ಇರಲ್ಲ" ಸಹಾಯಕ ಕ್ರಿಯಾಪದಗಳು, ಸಂಭಾವ್ಯಸೂಬ	ಕಕ ಮತ್ತು ನಿಷೇಧಾರ್ಥಕ ಕ್ರಿಯಾ ಪದಗಳು -
Helping Verbs "iru and iralla", Corresponding Future and Negatio	n Verbs
<ol> <li>ಹೋಲಿಕೆ (ತರತಮ), ಸಂಬಂಧ ಸೂಚಕ, ವಸ್ತು ಸೂಚಕ ಪ್ರತ್ಯಯ</li> </ol>	ಂಗಳು ಮತ್ತು ನಿಷೇಧಾರ್ಥಕ ಪದಗಳ ಬಳಕೆ-
Comparitive, Relationship, Identification and Negation Words	
Module - 5	(03 hours of pedagogy)
1. ಕಾಲ ಮತ್ತು ಸಮಯದ ಹಾಗೂ ಕ್ರಿಯಾಪದಗಳ ವಿವಿಧ ಪ್ರಕಾರಗಳ	-Different types of Tense. Time and Verbs
2. ದ್, -ತ್, - ತು, - ಇತು, - ಆಗಿ, - ಅಲ್ಲ, - ಗ್, -ಕ್, ಇದೆ, ಕ್ರಿಯಾ ಪ್ರತ್ಯಂ	
ವರ್ತಮಾನ ಕಾಲ ವಾಕ್ಯ ರಚನೆ - Formation of Past, Future and	
3. Kannada Vocabulary List :ಸಂಭಾಷಣೆಯಲ್ಲಿ ದಿನೋಪಯೋಗಿ ಕನ್ನ	್ನಡ ಪದಗಳು -Kannada Words in Conversation
University Prescribed Textbook :	
<ul> <li>Construction of the second state of the second state</li></ul>	
ಬಳಕೆ ಕನ್ನಡ	
ಡಾ. ಎಲ್. ತಿಮ್ಮೇಶ	
ಪ್ರಕಟಣೆ : ಪ್ರಸಾರಾಂ	ಗ,
ವಿಶ್ವೇಶ್ವರಯ್ಯ ತಾಂತ್ರಿಕ ವಿಶ್ವವಿದ್ಯಾಲ	ುಯ, ಬೆಳಗಾವಿ.
ಸೂಚನೆ :	
	ಯ ಪ್ರಶ್ನೆಪತ್ರಿಕೆ ಇರುತ್ತದೆ.
ವಿಶೇಷ ಸೂಚನೆ : 1. ಮೇಲಿನ ಪಠ್ಯಕ್ರಮಕ್ಕೆ ಸೀಮಿತವಾಗಿ ಅಂತಿಮ ಪರೀಕ್ಷೇ	
ವಿಶೇಷ ಸೂಚನೆ : 1. ಮೇಲಿನ ಪಠ್ಯಕ್ರಮಕ್ಕೆ ಸೀಮಿತವಾಗಿ ಅಂತಿಮ ಪರೀಕ್ಷೆ 2. ಮೇಲಿನ ಪಠ್ಯಕ್ರಮವನ್ನು ಹೊರತುಪಡಿಸಿದ ಬಳಕೆ ಕನ	ನ್ನಡ ಪಠ್ಯಪುಸ್ತಕದಲ್ಲಿನ ಉಳಿದ ಭಾಗಳನ್ನು
ವಿಶೇಷ ಸೂಚನೆ : 1. ಮೇಲಿನ ಪಠ್ಯಕ್ರಮಕ್ಕೆ ಸೀಮಿತವಾಗಿ ಅಂತಿಮ ಪರೀಕ್ಷೆ. 2. ಮೇಲಿನ ಪಠ್ಯಕ್ರಮವನ್ನು ಹೊರತುಪಡಿಸಿದ ಬಳಕೆ ಕಂ ಹೆಚ್ಚುವರಿ ಪೂರಕ ಓದಿಗಾಗಿ ಬಳಸಿಕೊಳ್ಳಬಹುದು. ಅ	ನ್ನಡ ಪಠ್ಯಪುಸ್ತಕದಲ್ಲಿನ ಉಳಿದ ಭಾಗಳನ್ನು
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ವಿಶೇಷ ಸೂಚನೆ : 1. ಮೇಲಿನ ಪಠ್ಯಕ್ರಮಕ್ಕೆ ಸೀಮಿತವಾಗಿ ಅಂತಿಮ ಪರೀಕ್ಷೆ 2. ಮೇಲಿನ ಪಠ್ಯಕ್ರಮವನ್ನು ಹೊರತುಪಡಿಸಿದ ಬಳಕೆ ಕನ ಹೆಚ್ಚುವರಿ ಪೂರಕ ಓದಿಗಾಗಿ ಬಳಸಿಕೊಳ್ಳಬಹುದು. ಅ ಪ್ರಶ್ನೆಗಳನ್ನು ಕೇಳಲಾಗುವುದಿಲ್ಲ.	ನ್ನಡ ಪಠ್ಯಪುಸ್ತಕದಲ್ಲಿನ ಉಳಿದ ಭಾಗಳನ್ನು ಂತಿಮ ಪರೀಕ್ಷೆಯಲ್ಲಿ ಈ ಪಾಠಗಳಿಂದ
ವಿಶೇಷ ಸೂಚನೆ : 1. ಮೇಲಿನ ಪಠ್ಯಕ್ರಮಕ್ಕೆ ಸೀಮಿತವಾಗಿ ಅಂತಿಮ ಪರೀಕ್ಷೆ. 2. ಮೇಲಿನ ಪಠ್ಯಕ್ರಮವನ್ನು ಹೊರತುಪಡಿಸಿದ ಬಳಕೆ ಕನ ಹೆಚ್ಚುವರಿ ಪೂರಕ ಓದಿಗಾಗಿ ಬಳಸಿಕೊಳ್ಳಬಹುದು. ಅ ಪ್ರಶ್ನೆಗಳನ್ನು ಕೇಳಲಾಗುವುದಿಲ್ಲ. 	ನ್ನಡ ಪಠ್ಯಪುಸ್ತಕದಲ್ಲಿನೆ ಉಳಿದ ಭಾಗಳನ್ನು ಂತಿಮ ಪರೀಕ್ಷೆಯಲ್ಲಿ ಈ ಪಾಠಗಳಿಂದ ಬ್ಬೇಶ (9900832331) ಇವರನ್ನು ಸಂಪರ್ಕಿಸಿ.
ವಿಶೇಷ ಸೂಚನೆ : 1. ಮೇಲಿನ ಪಠ್ಯಕ್ರಮಕ್ಕೆ ಸೀಮಿತವಾಗಿ ಅಂತಿಮ ಪರೀಕ್ಷೆ 2. ಮೇಲಿನ ಪಠ್ಯಕ್ರಮವನ್ನು ಹೊರತುಪಡಿಸಿದ ಬಳಕೆ ಕನ ಹೆಚ್ಚುವರಿ ಪೂರಕ ಓದಿಗಾಗಿ ಬಳಸಿಕೊಳ್ಳಬಹುದು. ಅ ಪ್ರಶ್ನೆಗಳನ್ನು ಕೇಳಲಾಗುವುದಿಲ್ಲ.	ನ್ನಡ ಪಠ್ಯಪುಸ್ತಕದಲ್ಲಿನ ಉಳಿದ ಭಾಗಳನ್ನು ಂತಿಮ ಪರೀಕ್ಷೆಯಲ್ಲಿ ಈ ಪಾಠಗಳಿಂದ ಬ್ಮೀಶ (9900832331) ಇವರನ್ನು ಸಂಪರ್ಕಿಸಿ. ಯನ ಸಾಮಗ್ರಿ & ಬಹು ಆಯ್ಕೆ ಮಾದರಿಯ

Pattern of question paper5. SEE Paper shall be set for 50 questions, each carrying 1 mark. The pattern of the question paper is MCQ

		INNOVATION and DESIGN THINKIN	IG	
	ect code	21IDT18/28	Credit: 01	
	s/Week:	1 hour. (Theory)	SEE: 50 Marks	
Total h	nours: 25	CIE: 50 Marks	SEE: 2 hours	
		MODULES		Hours
Shared model in	Design thinking	Module-I <ul> <li>Theory and practice in Design thinking</li> </ul>	<ul> <li>Explore presentation signers</li> </ul>	5
	Introduction about the	he design thinking: Chalk and Talk method through presentation MVP and Prototyping and videos		-
		Module-II		5
<b>Tools for Design</b>				
design - Collabo	pration in distributed I			
Teaching- Learning	collaborated enabled	6 6	alysis Simulation exercises for	
Process	Live examples on th	e success of collaborated design thinking		-
Prototyping Teaching-	g to Business Proces Case studies on des	Module-III s modeling – Agile in Virtual collaboration ign thinking and business acceptance of the d		5
Learning Process	virtual eco-system f	or collaborated prototyping		
DT For strategi		Module -IV		5
Value redefiniti Culture – Rapid design.	on - Extreme Comp prototyping, Strategy	<ul> <li>Strategic Foresight - Change – Sense Maki</li> <li>etition – experience design - Standardizatio</li> <li>and Organization – Business Model</li> </ul>		
Teaching- Learning Process		imples of successful designs tudents on the success of design Live project of	on design thinking in a group of	
		Module-V		
Design thinking	workshop Design Th	inking Work shop Empathize, Design, Ideate, I	Prototype and Test	5
Teaching- Learning Process		king workshop from the expect and then pres		
edition) Secon	d Edition, 2013.	en O'Brien and John P. Hutchinson, "Engineer n of Business: Why Design Thinking is the Ne		
1/. Roge				ırd
Busi 18. Hass	ness Press , 2009. o Plattner, Christoph	Meinel and Larry Leifer (eds), "Design Thinki		ırd
Busi 18. Hass – Ap 19. Idris Scho	ness Press , 2009. o Plattner, Christoph ply", Springer, 2011 Mootee, "Design Thi ool", John Wiley & So	Meinel and Larry Leifer (eds), "Design Thinki nking for Strategic Innovation: What They Ca	ng: Understand – Improve	
Busi 18. Hass – Ap 19. Idris Scho <b>Reference boo</b> 9. Yous 10. Book Publ (Aut	ness Press , 2009. o Plattner, Christoph ply", Springer, 2011 Mootee, "Design Thi ool", John Wiley & Sco oks: sef Haik and Tamer M c - Solving Problems ishing) Hardcover – 2 hor).	Meinel and Larry Leifer (eds), "Design Thinki nking for Strategic Innovation: What They Car ons 2013. A.Shahin, "Engineering Design Process", Ceng with Design Thinking - Ten Stories of What W 20 Sep 2013 by Jeanne Liedtka (Author), Andr	ng: Understand – Improve n't Teach You at Businessor Desig gageLearning, Second Edition, 201 Vorks (Columbia Business School ew King (Author), Kevin Bennett	n 1.
Busi 18. Hass – Ap 19. Idris Scho Reference boo 9. Yous 10. Book Publ (Aut	ness Press , 2009. o Plattner, Christoph ply", Springer, 2011 Mootee, "Design Thi ool", John Wiley & Sco oks: sef Haik and Tamer M c - Solving Problems ishing) Hardcover – 2 hor). ne (Course Skill Set)	Meinel and Larry Leifer (eds), "Design Thinki nking for Strategic Innovation: What They Car ons 2013. A.Shahin, "Engineering Design Process", Ceng with Design Thinking - Ten Stories of What W 20 Sep 2013 by Jeanne Liedtka (Author), Andr At the end of the course the student will be ab	ng: Understand – Improve n't Teach You at Businessor Desig gageLearning, Second Edition, 201 Vorks (Columbia Business School ew King (Author), Kevin Bennett	n 1.
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		P.C	O.A College of Engineering Kalb					itu	tion	)				
0	D 11		Scheme of Teaching and						.1					
			E)and Choice Based Credit Syste	em(CBCS) (E	ffec	ctiv	e fro	m				•		.3)
I Sel	nester (IPF	L Stream)			T.	a ala			1		•	s Grou	<b>p</b> )	6
				B			ing s/We	eek		ami	nati	on		Cre
SI. No	Course an CourseCo		CourseTitle	TD/PSB	The	iri		cal/	uration	in hours	CIEM	see SEEMar ks	Total arks	
1	ASC(IC)	22MATM21	Mathematics for ME stream-I	Maths	2	2	2	C	03		50	50	100	04
2	ASC(IC)	22PHYM22	Physics for ME Stream	PHY	2	2	2	C	03		50	50	100	04
	ESC	22EME23	Elements of mechanical	Civil					03		50	50	100	03
3			engineering	Engineering Dept	2	2	0	(	)					
4	ESC-I	22ESC145	Introduction to C Programming	Respective Engg dept	3	0	0	C	03		50	50	100	03
5.	PLC-I	22ETC15X	Emerging Technology Courses		2	0	2	C	03					
6	AEC	22ENG16	Communicative English	Humanities	1	0	0	C	1.5		50	50	100	01
7		22KSK27/ 22KBK27	0	Humanities	1	0	0	C	1.5		50	50	100	01
8	AEC/SDC	22IDT28	Innovation and Design Thinking	Any Dept	1	0		00	01		50	50	100	0 1
				TOTAL							400	400	800	20

		P.D.	A College of Engineerir						tution)				
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			BE)and Choice Based C	redit System (CE	BCS	5) (1	Effe	ective f					22-23)
115	emester (11	PE Stream)	Mech, IPE /EE		То	ach			(Chei Exami		Grou	<b>p</b> )	
				8				g Veek	сханн	natio	1		
SI.	Course an	d Course		ID/PSB					•		-		
No	Code		Cour	<u>E</u>	H	Tuto	Prac	SDA	Duratio n in	2 Z	Mar	r z	
			se		T		Р	S	Dur. n in	CIE	SEE	Total Mark	
			Title			1	ł	3	I	C A	S	ΈZ	
1	ASC(IC)		Mathematics for ME Stream-II	Maths	2	2	2	0	03	50	50	100	04
2	ASC(IC)		Chemistry for Civil Engg Stream	Chemistry	2	2	2	0	03	50	50	100	04
3	ESC	22CED13	Computer-Aided Engineering Drawing	Civil/Mech Engg dept	2	0	2	0	03	50	50	100	03
4	ESC-I	22ESC242	Introduction to Electrical Engineering	Respective EnggDept	3	0	0	0	03	50	50	100	03
5	ETC-I	22DI C25V	Programming		3	0	0	0	03				
6	AEC		Professional Writing Skills in English	Humanities	1	0	0	0	1.5	50	50	100	01
7	HSMS	22ICO17/27	Indian Constitution	Humanities	1	0	0	0	01	50	50	100	01
8	HSMS		Scientific Foundations of Health	AnyDept	1	0	0	0	01	50	50	100	01
			•	TOTAL						40 0	400	800	20

	Course Title: Mathem	natics-I for Mechanical Engin	neering stream	
	[As per Choice	Based Credit System (CBCS)		
		n the academic year 2022-23)		
	Course Code	22MATM11	<b>CIE Marks</b>	50
	Credits	04	SEE Marks	50
	Course Type	Integrated		
	Contact Hours/Week (L-T-P)	2-2-2	<b>Total Marks</b>	100
	Contact Hours of Pedagogy	42 hours Theory +10 Lab slots	Exam Hours	03
	Module-1		(5L+3T)	
	tion to polar coordinates and curvat			
	coordinates, Polar curves, angle betwe			
	ations. Curvature and Radius of curva	iture - Cartesian, Parametric, P	olar and Pedal forms.	Simple
Problems.	y: Center and circle of curvature, evol	utes and involutes		
•	ons: Applied Mechanics, Structural d		atoriale Flasticity	
	vels: L1, L2 and L3)	esign and pauls, Strength of In	ateriais, Elasticity.	
(ILDT LC)	, , , , , , , , , , , , , , , , , , , ,	xpansion and Multivariable	Calculus (6L+3	T)
Introduct	tion to series expansion and partial			,
applicatio		unter entitution in the field of	internament engineer	ing
	r's and Maclaurin's series expansion f	for one variable (Statement on)	v) – problems.	
	nate forms : L-Hospital's rule, problem		J) I	
	differentiation, total derivative - differentiation		ons. Jacobian and	
	Maxima and minima for a function o			
Self-study	y: Euler's theorem and problems. Met	hod of Lagrange's undetermin	ed multipliers with sin	gle constraint.
Applicati	ons: Computation of stress and strain	, Errors and approximations, E	stimating the critical p	oints and
	alues( <b>RBT Levels: L1, L2 and L3</b> )			
	Aodule-3 Ordinary Differential Equ		(6L+2T)	
	tion to first-order ordinary differen	tial equations pertaining to t	he applications for	
	cal engineering.			
Linear a	and Bernoulli's differential equations	Exact and reducible to exact a	differential equations -	Integrating
factors on	$\frac{1}{N}\left(\frac{\partial M}{\partial y}-\frac{\partial N}{\partial x}\right)$ and $\frac{1}{M}\left(\frac{\partial N}{\partial x}-\frac{\partial N}{\partial x}\right)$	$\frac{\partial M}{\partial M}$		
		• )		
0.1	al trajectories and Newton's law of co	oling		
-		•		
Nonlinear	r differential equations: Introduction	n to general and singular solution	ons, Solvable for p onl	y, Clairaut's
Nonlinear equations,	r differential equations: Introduction , reducible to Clairaut's equations - Pr	n to general and singular solution roblems.	-	-
Nonlinear equations, Self-Study	r differential equations: Introduction , reducible to Clairaut's equations - Pr y: Applications of ODEs in Mechanic	n to general and singular solution roblems. cal Engineering problems like v	-	-
Nonlinear equations, Self-Study linear OD	r differential equations: Introduction , reducible to Clairaut's equations - Pr y: Applications of ODEs in Mechanic E by the method of solvable for x and	n to general and singular solution roblems. cal Engineering problems like v l y.	vibration problems, so	-
Nonlinear equations, Self-Study linear OD	r differential equations: Introduction , reducible to Clairaut's equations - Pr y: Applications of ODEs in Mechanic E by the method of solvable for x and ons: Rate of Growth or Decay, Condu	n to general and singular solution roblems. cal Engineering problems like v l y. l y.	vibration problems, so 1, L2 and L3)	-
Nonlinear equations, Self-Study linear OD Application	r differential equations: Introduction , reducible to Clairaut's equations - Pr y: Applications of ODEs in Mechanic E by the method of solvable for x and ons: Rate of Growth or Decay, Condu Module-4 Integra	n to general and singular solution roblems. cal Engineering problems like v l y. <u>action of heat.</u> ( <b>RBT Levels: L</b> <b>al Calculus</b>	vibration problems, so 1, L2 and L3) (6L+3T)	-
Nonlinear equations, Self-Study linear OD Application	r differential equations: Introduction , reducible to Clairaut's equations - Pr y: Applications of ODEs in Mechanic E by the method of solvable for x and ons: Rate of Growth or Decay, Condu Module-4 Integrat tion to Integral Calculus in Mechan	n to general and singular solution roblems. cal Engineering problems like v l y. <u>action of heat. (<b>RBT Levels: L</b></u> <b>al Calculus</b> <b>ical Engineering applications</b>	vibration problems, so <u>1, L2 and L3)</u> (6L+3T) s.	-
Nonlinear equations, Self-Study linear OD <u>Application</u> Introduct Multiple 1	r differential equations: Introduction , reducible to Clairaut's equations - Pr y: Applications of ODEs in Mechanic E by the method of solvable for x and ons: Rate of Growth or Decay, Condu Module-4 Integrat tion to Integral Calculus in Mechan Integrals: Evaluation of double and t	n to general and singular solution roblems. cal Engineering problems like v l y. <u>action of heat. (<b>RBT Levels: L</b></u> <b>al Calculus</b> <b>ical Engineering applications</b> riple integrals, evaluation of do	vibration problems, so <u>1, L2 and L3)</u> (6L+3T) s. ouble integrals by	-
Nonlinear equations, Self-Study linear OD Application Introduct Multiple I change of	r differential equations: Introduction , reducible to Clairaut's equations - Pr y: Applications of ODEs in Mechanic E by the method of solvable for x and ons: Rate of Growth or Decay, Condu Module-4 Integrat tion to Integral Calculus in Mechan Integrals: Evaluation of double and t order of integration, changing into po	n to general and singular solution roblems. cal Engineering problems like v l y. <u>action of heat. (<b>RBT Levels: L</b></u> <b>al Calculus</b> <b>ical Engineering applications</b> riple integrals, evaluation of do	vibration problems, so <u>1, L2 and L3)</u> (6L+3T) s. ouble integrals by	-
Nonlinear equations, Self-Stud linear OD Application Introduct Multiple I change of Volume b	r differential equations: Introduction , reducible to Clairaut's equations - Pr y: Applications of ODEs in Mechanic E by the method of solvable for x and ons: Rate of Growth or Decay, Condu Module-4 Integra tion to Integral Calculus in Mechan Integrals: Evaluation of double and t order of integration, changing into po y double integral. Problems.	n to general and singular solution roblems. cal Engineering problems like version by subscription of heat. ( <b>RBT Levels: L</b> <b>al Calculus</b> <b>ical Engineering applications</b> riple integrals, evaluation of de olar coordinates. Applications t	vibration problems, so 1, L2 and L3) (6L+3T) s. ouble integrals by to find Area and	lution of non-
Nonlinear equations, Self-Stud linear OD Application Introduct Multiple I change of Volume b Beta and	r differential equations: Introduction , reducible to Clairaut's equations - Pr y: Applications of ODEs in Mechanic E by the method of solvable for x and ons: Rate of Growth or Decay, Condu Module-4 Integra tion to Integral Calculus in Mechan Integrals: Evaluation of double and t order of integration, changing into po y double integral. Problems. Gamma functions: Definitions, prop	n to general and singular solution roblems. cal Engineering problems like version ly. <u>action of heat.</u> ( <b>RBT Levels: L</b> <b>al Calculus</b> <b>ical Engineering applications</b> riple integrals, evaluation of de olar coordinates. Applications to poerties, relation between Beta a	vibration problems, so 1, L2 and L3) (6L+3T) s. ouble integrals by to find Area and	lution of non-
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	sessions + 1 repetition class + 1 Lab Assessment
1	2D plots for Cartesian and polar curves
2	Finding angle between polar curves, curvature and radius of curvature of a given curve
3	Finding partial derivatives, Jacobian and plotting the graph
4	Applications to Maxima and Minima of two variables
5	Solution of first-order differential equation and plotting the graphs
6	Program to compute surface area, volume and centre of gravity
7	Evaluation of improper integrals
8	Numerical solution of system of linear equations, test for consistency and graphical representation
9	Solution of system of linear equations using Gauss-Seidel iteration
10	Compute eigen values and eigenvectors and find the largest and smallest eigen value by
	Rayleigh power method
Sugg	ested software's: Mathematica/MatLab/Python/Scilab
	se outcome (Course Skill Set)
	end of the course the student will be able to:
CO	Apply the knowledge of calculus to solve problems related to polar curves
CO	
001	functions
CO	
CO	
CO 5	
τυ.	eigen values and eigen vectors. Familiarize with modern mathematical tools namely
	MATHEMATICA/ MATLAB/ PYTHON/SCILAB
1	
	sted Learning Resources:
	s (Title of the Book/Name of the author/Name of the publisher/Edition and Year) Books
	<b>B. S. Grewal</b> : "Higher Engineering Mathematics", Khanna publishers, 44th Ed., 2021.
	E. Kreyszig: "Advanced Engineering Mathematics", John Wiley & Sons, 10th Ed., 2018.
	ence Books
	<b>V. Ramana:</b> "Higher Engineering Mathematics" McGraw-Hill Education, 11th Ed., 2017
	Srimanta Pal & Subodh C. Bhunia: "Engineering Mathematics" Oxford University Press,3rd Ed.,
2016.	
	N.P Bali and Manish Goyal: "A textbook of Engineering Mathematics" Laxmi
	Publications, 10th Ed., 2022.
	C. Ray Wylie, Louis C. Barrett: "Advanced Engineering Mathematics" McGraw – Hill Book Co.,
	ork, 6th Ed., 2017.
	Gupta C.B, Sing S.R and Mukesh Kumar: "Engineering Mathematic for Semester I and II", Mc-Grav
	ducation(India) Pvt. Ltd 2015.
	H. K. Dass and Er. Rajnish Verma: "Higher Engineering Mathematics" S. Chand
1	Publication, 3rd Ed., 2014.
	James Stewart: "Calculus" Cengage Publications, 7th Ed., 2019.
7	
7 8. ]	David C Lay: "Linear Algebra and its Applications", Pearson Publishers, 4th Ed., 2018. Gareth Williams: "Linear Algebra with applications", Jones Bartlett Publishers Inc.,

Course Title:	Physics for ME Stream		
Course Code:	22PHYM12/22	CIE Marks	50
Course Type	Integr	SEE Marks	50
(Theory/Practical/Integrated )	ated	Total Marks	10
			0
Teaching Hours/Week (L:T:P: S)	2:2:2:0	Exam Hours	03
Total Hours of Pedagogy	40 hours Theory + 10-12	Credits	04
	Lab slots		
Module-1	(8 Hours )		

### Module -I: Oscillations and Shock waves:

**Oscillations:** Simple Harmonic motion (SHM), Differential equation for SHM (No derivation), Sprigs: Stiffness Factor and its Physical Significance, Series and Parallel combination of springs (Derivation), Types of Springs and their applications. Theory of Damped oscillations (Qualitative), Types of Damping (Graphical Approach). Engineering applications of Damped oscillations, Theory of Forced oscillations (Qualitative), Resonance, Sharpness of resonance. Numerical Problems.

**Shock waves:** Mach number and Mach Angle, Mach Regimes, Definition and Characteristics of Shock waves, Construction and working of Reddy Shock tube, Applications of Shock Waves, Numerical problems.

# Pre-requisites: Basics of Oscillations

#### Self-learning: Simple Harmonic motion, Differential equation for SHM Module-2 (8 Hours)

### Elasticity

Stress-Strain Curve, Stress hardening and softening. Elastic Moduli, Poisson's ratio, Relation between Y, n and  $\sigma$  (with derivation), mention relation between K, Y and  $\sigma$ , limiting values of Poisson's ratio. Beams, Bending moment and derivation of expression, Cantilever and I section girder and their Engineering Applications, Elastic materials (qualitative). Failures of engineering materials - Ductile fracture, Brittle fracture, Stress concentration, Fatigue and factors affecting fatigue (only qualitative explanation), Numerical problems.

### Pre requisites: Elasticity, Stress

### & StrainSelf-learning: Stress-

Strain Curve

# Module-3 (8 Hours)

### Thermoelectric materials and devices:

Thermo emf and thermo current, Seeback effect, Peltier effect, Seeback and Peltier coefficients, figure of merit (Mention Expression), laws of thermoelectricity. Expression for thermo emf in terms of T1 and T2, Thermo couples, thermopile, Construction and Working of Thermoelectric generators (TEG) and Thermoelectric coolers (TEC), low, mid and high temperature thermoelectric materials, Applications: Exhaust of Automobiles, Refrigerator, Space Program (RTG), Numerical Problems

# Pre requisites: Basics of Electrical

### conductivitySelf-learning: Thermo emf and thermo current

Module-4 (8 Hours)

# Photonics:

# LASER

Properties of a LASER Beam, Interaction of Radiation with Matter, LASER action, Population Inversion, Metastable State, Requisites of a LASER System, ND YAG LASER, LASER Range Finder, LIDAR, Cutting, Drilling, Welding and Surface hardening.

# **Optical Fiber**

Principle and Construction of Optical Fibers, Acceptance angle and Numerical Aperture (NA), Expression for NA, Modes of Propagation, Attenuation and Fiber Losses, Fiber Optic Displacement Sensor, Fiber Optic Temperature Sensor, Numerical Problems

# Pre requisite: Properties of light.

# Self-learning: Total Internal Reflection.

# Module-5 (8 Hours)

# Material Characterization and Instrumentation Techniques:

Introduction to nano materials: Nanomaterial and nanocomposites. Principle, construction and working of X-ray Diffractometer, Crystallite size determination by Scherrer equation, Atomic Force Microscopy (AFM): Principle, construction, working and applications, X-ray photoelectron spectroscopy(XPS), Scanning electron microscopy (SEM), Transmission electron microscopy (TEM), Numerical Problems.

# Pre requisites: Quantum MechanicsSelf-learning: Crystallites

# Course outcome (Course Skill Set)

At the end of the course the student will be able to:

CO1 **Elucidate** the concepts in oscillations, waves, elasticity and material failures

CO2 **Summarize** the fundamentals of Thermoelectric materials and their application

CO3 **Discuss** The principles photonic devices and their application relevant to mechanical engineering

CO4 **Explain** the various material characterization techniques

CO5 **Practice** working in groups to conduct experiments in physics and **perform** precise and honest measurements.

# Laboratory Component:

Any Ten Experiments have to be completed from the list of experimentsNote: The experiments have to be

classified into

- a) Exercise
- b) Demonstration
- c) Structured Inquiry
- d) Open Ended

Based on the convenience classify the following experiments into above categories. Select at least onesimulation /spreadsheet activity.

# List of Experiments

- 1. Determination of Young's modulus of the material of the given bar Uniform Bending.
- 2. Determination of Rigidity modulus of the Material of the wire using Torsional Pendulum.
- 3. Study of Forced Mechanical Oscillations and Resonance.
- 4. Study of the frequency response of Series & Parallel LCR circuits.
- 5. Determination of Fermi Energy of the given Conductor.
- 6. Determination of Resistivity by Four Probe Method.

- 7. Determination of effective spring constant of the given springs in series and parallel combinations.
- 8. Determination of Young's modulus of the material of the given bar Single Cantilever.
- 9. Determination of the Moment of Inertia of the given irregular body using torsional pendulum.
- 10. Determination of Wavelength of Laser using Diffraction Grating.
- 11. Determination of Acceptance angle and Numerical Aperture of the given Optical Fiber.
- 12. Determination of the Radius of Curvature of the given Plano Convex Lens by setting Newton's Rings.
- 13. Step Interactive Physical Simulations.
- 14. Study of motion using spread Sheets
- 15. Application of Statistics using Spread Sheets.
- 16. PHET Interactive Simulations
- 17. Flywheel
- 18. Interference of Air wedge

:(https://phet.colorado.edu/en/simulations/filter?subjects=physics&type=html,prototype) Suggested Learning Resources:

# Books (Title of the Book/Name of the author/Name of the publisher/Edition and Year)

- 1. Vibrations and Waves (MIT introductory Physics Series). A P French. CBS. 2003 Edition
- 2. Timoshenko, S. and Goodier J.N. "Theory of Elasticity", 2nd Edition, McGraw Hill Book Co, 2001.
- 3. Sadhu Singh, "Theory of Elasticity", Khanna Publishers, 1997
- 4. Mechanical Properties of Engineered Materials by Wole Soboyejo, CRC Press; 1st edition, 2002
- 5. Heat & Thermodynamics and Statistical Physics( XVIII-Edition) Singhal, Agarwal & Satyaprakash PragatiPrakashan, Meerut, 2006. 4
- 6. Heat and Thermodynamics (I-Edition) D.S. Mathur S. Chand & Company Ltd., New-Delhi, 1991
- 7. Heat and Thermodynamics, Brijlal & Subramanyam, S. Chand & Company Ltd., New-Delhi.
- 8. Physics of Cryogenics by Bahman Zohuri, Elsevier, 2018
- 9. Materials Characterization Techniques-Sam Zhang, Lin Li, Ashok Kumar, CRC Press, First Edition, 2008.
- 10. Characterization of Materials- Mitra P.K. Prentice Hall India Learning Private Limited.
- 11. Nanoscience and Nanotechnology: Fundamentals to Frontiers M.S. Ramachandra Rao & Shubra Singh, WileyIndia Pvt Ltd.
- 12. Nano Composite Materials-Synthesis, Properties and Applications, J. Parameswaranpillai, N. Hameed, T.Kurian, Y. Yu, CRC Press.

Shock waves made simple by Chintoo S Kumar, K Takayama and K P J Reddy: Willey India Pvt. Ltd,Delhi,2014

Course Title:	ELEMENTS OF MECHANIC	AL ENGINEERING	•
Course Code:	22EME13/23	CIE Marks	50
Course Type		SEE Marks	50
(Theory/Practical/Integrated)	Theory	Total Marks	100
Teaching Hours/Week (L:T:P: S)	2:2:0:0	Exam Hours	03
Total Hours of Pedagogy	40 hours	Credits	03
	Module-1 (8 hours)		
Introduction to Mechanical Engineering Role of Mechanical Engineering in Indust Energy, Manufacturing, Automotive, Aero Steam Formation and Application: Modes of heat transfer, Steam format numerical problems). Energy Sources and Power Plants: Basic working principles of Hydel power power plant and Wind power plant. Machine Tool Operations: Lathe: Principle of working of a center la turning by swivelling the compound rest, Drilling Machine: Working of simple dri sinking, counter boring, Milling Machine: Working and types of n (No sketches of machine tools, sketches to Introduction to Advanced Manufacturi	ries and Society- Emerging Trendospace, and Marine sectors. ion, Types of steam, Steam pre- er plant, Thermal power plant, r <u>Module-2 (8 hours)</u> the, lathe operations: Turning, fac lling machine, drilling operations milling machine, milling operations be used only for explaining the o	roperties and applications nuclear power plant, Solar eing, knurling, threadcuttin drilling, boring, reaming, ns: plane milling, endmillin operations).	s of steam (simple r power plant, Tidal g, taper tapping, counter ng and slot milling.
CNC, 3D printing. Introduction to IC Engines: Componen IC Engines, performance of IC engines (S Introduction to Refrigeration and Air C properties. Working principle of VCR refu	imple numerical). C <b>onditioning</b> : Principle of refrige	ration, Refrigerants and the	eir desirable
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CNC, 3D printing. Introduction to IC Engines: Componen IC Engines, performance of IC engines (S Introduction to Refrigeration and Air C properties. Working principle of VCR refr air Conditioners Mechanical Power Transmission: Gear Drives: Types - spur, helical, beve (simple numerical problems) Belt Drives: Introduction, Types of belt numerical problems)Joining Processes: S Arc welding, Gas welding, (types of flame Insight into future mobility technology Advantages and disadvantages of Electric Introduction to Mechatronics and Rol anatomy, Applications of Robots in mater CO1 Explain the role of mechanical engineering in CO2 Describe different conventional and advanced CO3 Explain different gear drives, gear trains, asp CO4 Determine the condition of steam and its end	ts and working principles, 4-Stro Simple numerical). Conditioning: Principle of refrige rigeration system, working princip <u>Module-4 (8 hours)</u> el, worm and rack and pinion, v t drives (Flat and V-Belt Drive) Soldering, Brazing and Welding, es), TIG welding, MIG welding at <u>Module-5 (8 hours)</u> y; Electric and Hybrid Vehicles, Vehicles (EVs) and Hybrid vehicles, vehicles (EVs) and Hybrid vehicles industry and society, fundamentals of ste machining processes, IC engines, propulsi- pects of future mobility and fundamental argy, performance parameters of IC engines	ration, Refrigerants and the ole of room air conditioner elocity ratio, simple and c , length of the belt and t Definitions, classification nd Fusionwelding. Components of Electric a cles. op mechatronic systems. J mbly andinspection. am and non-conventional energy ive devices, air-conditioning, refr s of robotics ines, velocity ratio and power tran	eir desirable & Applications of compound gear train eensions ratio (simpl a of welding process and Hybrid Vehicles coints & links, Robo sources igeration.
CNC, 3D printing. Introduction to IC Engines: Componen IC Engines, performance of IC engines (S Introduction to Refrigeration and Air O properties. Working principle of VCR refr air Conditioners Mechanical Power Transmission: Gear Drives: Types - spur, helical, beve (simple numerical problems) Belt Drives: Introduction, Types of belt numerical problems)Joining Processes: S Arc welding, Gas welding, (types of flame Insight into future mobility technology Advantages and disadvantages of Electric Introduction to Mechatronics and Rol anatomy, Applications of Robots in mater CO1 Explain the role of mechanical engineering in CO2 Describe different conventional and advanced CO3 Explain different gear drives, gear trains, asp CO4 Determine the condition of steam and its end transmission systems. CO5 Explain the Working Principle of EV vehicles Suggested Learning Resources: Test Books (Title of the Book/Name of the author	ts and working principles, 4-Stro Simple numerical). Conditioning: Principle of refrige rigeration system, working princip <u>Module-4 (8 hours)</u> el, worm and rack and pinion, v t drives (Flat and V-Belt Drive) Soldering, Brazing and Welding, es), TIG welding, MIG welding at <u>Module-5 (8 hours)</u> y; Electric and Hybrid Vehicles, Vehicles (EVs) and Hybrid vehicles, Vehicles (EVs) and Hybrid vehicles industry and society, fundamentals of ste machining processes, IC engines, propulsi- pects of future mobility and fundamental ergy, performance parameters of IC engi- and concepts of Mechatronics and Roboti /Name of the publisher/Edition and Yea	ration, Refrigerants and the ole of room air conditioner elocity ratio, simple and c , length of the belt and t Definitions, classification and Fusionwelding. Components of Electric a cles. op mechatronic systems. J mbly andinspection. am and non-conventional energy ive devices, air-conditioning, refr is of robotics ines, velocity ratio and power tran	eir desirable & Applications of compound gear train eensions ratio (simpl a of welding process and Hybrid Vehicles coints & links, Robo sources igeration.
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Course Title:		Introduction to C Pr	ogramming	
Course Code:		22ESC145/245	CIE Marks	50
Course Type (T	heory/Practical	Integrated	SEE Marks	50
/Integrated )		C	Total Marks	100
Teaching Hours	/Week (L:T:P: S)	2:0:2	Exam Hours	03
Total Hours of		40 hours	Credits	03
	0.07	ODULES		TeachingHours
	Ν	Iodule-I		
Executing a "C" <b>Operators and I</b> operators, assign special operators	wcharts, Introduction to C: A program, Constants, Variables an Expressions, Managing Input/ C ment operators, increment/ decrement . Evaluation of expression, pro- tor precedence and associativity.	d Data types. Dutput: Arithmetic operators ment operators, conditional c ecedence of arithmetic ope	s, relational operators, logical operators, bit wise operators, erators, type conversions in	8 hours
Decision making nested if statem Statements.	Module-II g and branching: Decision Mak ents, the else if ladder, Switch g and Looping: While stateme cises.	ting with if statement, Simp n statement, The ? : opera	le if statement, the if else , ator, Unconditional control	8 hours
Initialization, exa Strings: Declarit	Module-III imensional Array, declaration, mples and exercises. ng and Initializing String Variab ic Operations on Characters, Strir	les, Reading Strings from T	Ferminal, Writing strings to	8 hours
User-defined Fur declaration, Cate <b>Structures and</b> Members, Struct	Module -IV Recursion : Need for User-definitions, Definition of functions, H gory of functions, Recursion, exa Unions: Defining a Structures, D ure Initialization, Copying and co f structuresUnions: Union, Size	Return value and their type amples and exercises. Declaration of Structure varia comparing structure variables	ables, Accessing Structure , operations on individual	8 hours
variables, Initiali Examples & exer <b>File Manageme</b>	action, Understanding pointers, z zing of pointer variables, accessi	ng a variable through its poi e, closing file, input, outpu	nter, pointer expressions,	8 hours
Text book:	-			
	isamy, "Programming in ANSI C"	', Tata Mcgraw Hill Education	on Private Limited-VEdition,	2016
19.Yashwant P 20.Brian W K Second Edit	ildt, "Complete Reference in C",F . Kanetakar, "Let us C", Fifth Edi ernighan & Dennis M Ritchie ion, 2004.	tion, BPB Publications, 2016 " The C Programm	5. ning Language", Prentice Hall	
Third edition	Forouzan and Richard F.Gilberg," n, Thomson Learning, 2005.	Computer Program: A struct	ured programmingApproach U	Jsing C.",
	e (Course Skill Set)			
	e course the student will be able t			1
	velop Algorithm and flowcharts and		** *	nguage
	ntify and use proper decision /con		** *	
	oly arrays and Strings fu			
	nonstrate the use of structures and	***	*	
CO5 Dev	velop C program for real world pr	oblems using pointers and fil	leoperations.	
	τ.	st of Programs – 22ESC145	1045	

Pra	ctice Programs:
	ite a C program using printf statement:
	Print your name and Address.
	) Print the pattern:
U,	-
	+ .
-	+ + +
	+ +
<b>2</b> 11 1	+ *
	tite a C Program using Scanf statements
	Read int, char and float values from the keyboard and display the same.
3.W	rite a c program to find :
	i) Area of rectangle
	ii) Area of Square
	iii) Area of circle
	rite a c program using if, ifelse, nested if and elseif ladder.
i	) To find whether number is odd or even.
i	i) To find whether number is +ve or -ve.
ii	i) To find largest of two numbers.
iv	<i>t</i> ) To find largest of three numbers.
5. W	rite a c program using while, do-while and for looping statement.
	Print 1 to 10 numbers using all the three looping statements.
,	rite a c program using arrays:
	Read 1 to 10 array elements and display the same.
	Read float elements and display the same.
	Read character and display the same.
	rite c program using strings:
	Read a string from keyboard and display the same.
	ogramming Assignments:
	C Program to find Mechanical Energy of a particle using $E = mgh+1/2 mv^2$ .
	C Program to convert Kilometers into Meters and Centimeters.
	C Program To Check the Given Character is Lowercase or Uppercase or Special Character.
	Program to balance the given Chemical Equation values x, y, p, q of a simple chemical equation of the type: The task is
	to find the values of constants b1, b2, b3 such that the equation is balanced on both sides and it must be the reduced
	form.
	Implement Matrix multiplication and validate the rules of multiplication.
	Compute $sin(x)/cos(x)$ using Taylor series approximation. Compare you result with the built-in library function. Print both the results with appropriate inferences.
47.	Sort the given set of N numbers using Bubblesort.
	Write functions to implement string operations such as compare, concatenate, string length. Convince the parameter passing techniques.
49.	Implement structures to read, write and compute average-marks and the students scoring above and below the average marks for a class of N students.
	velop a program using pointers to compute the sum, mean and standard deviation of all elements stored in an array of
	numbers

	Communicative English		
Subject code	22ENG16	Credit: 0	1
Hours/Week:	1 hour. (Theory)	SEE: 50 Marks	
Total hours: 15	CIE: 50 Marks	SEE: 1.5 hour	
	MODULES		TeachingHours
	Module-I		
English, Process of Communicative I	<b>unicative English :</b> Communicative English, Fundate munication, Barriers to Effective Communicative Er English. sonal Communication Skills.		3 hours
	Module-II		
consonants andvowels, So Accent, Stress Shift and	es : Phonetic Transcription, English Pronunciation, I bunds Mispronounced, Silent and Non silent Letters, Sy	llables and Structure. Word	3 hours
Intonation, Spelling Rules	and Words often Misspelt. Common Errors in Pronunc	ciation.	
Grammar and Parts of Speech, Articles a	Module-III nicative Grammar and Vocabulary PART - I and Preposition. Question Tags, One Word Substitutes cabulary, All Types of Vocabulary – Exercises on it.	C	3 hours
	Module -IV		
<b>Basic English Communicative Grammar and Vocabulary PART - II:</b> Words formation - Prefixes and Suffixes, Contractions and Abbreviations. Word Pairs (Minimal Pairs) – Exercises, Tense and Types of tenses, The Sequence of Tenses (Rules in use of Tenses) and Exercises on it.			3 hours
bequence of renses (rules	Module-V		
Difference between Exter (MTI), Various Technique Neutralization of Mother 7	for Employment :Information Transfer:Oral Presempore/Public Speaking, Communication Guidelines. es for Fongue Influence. Reading and Listening Comprehensis: Introduction, classification, properties and apple	Mother Tongue Influence ions – Exercises.	3 hours
Text book:			
11) Communicatio 12) A Textbook of	n Skills by Sanjay Kumar & Pushp Lata, Oxford Unive English Language Communication Skills, (ISBN-97 ons, Bengaluru - 2022.		
Reference books:			
India Pvt Limite	<b>munication</b> by Gajendra Singh Chauhan and Et al, (Is ed [Latest Revised Edition] - 2019.		engage learning
0	gineers by N.P.Sudharshana and C.Savitha, Cambridge age Communication Skills – Lab Manual cum Worl	•	ia Dut Limitad
	Edition] – (ISBN-978-93-86668-45-5), 2019.	NUUN, Cengage learning Ind	
-	chnical English – D Praveen Sam, KN Shoba, Camb	ridge University Press – 2020	).
	sh Usage by Michael Swan, Oxford University Press –	e .	-
Course outcome (Cours			
	Communicative English (22ENG16) the student will b	be able to:	
	and apply the Fundamentals of Communication Skills		
	nuances of phonetics, intonation and enhance pronun		
5	sic English grammar and essentials of language skills a		
	and use all types of English vocabulary and language pa		
	echniques of Information Transfer through presentation		

# ಸಾಂಸ್ಕೃತಿಕ ಕನ್ನಡ - ಕನ್ನಡ ಬಲ್ಲ ಮತ್ತು ಕನ್ನಡ ಮಾತೃಭಾಷೆಯ ವಿದ್ಯಾರ್ಥಿಗಳಿಗೆ ನಿಗದಿಪಡಿಸಿದ ಪಠ್ಯಕ್ರಮ

Subject Code	Subject	Stream	Th– Tut-Pr	Credits
22KSK17 / 27	SAMSKRUTHIKA KANNADA	Humanities	1 - 0 - 0	01
		and Social		
		Sciences		
		(H.S.S)		

CIE : 50

SEE : 1 hours 30 Minutes

Total : 15 Hours

Course objectives : ಸಾಂಸ್ಕೃತಿಕ ಕನ್ನಡ ಪಠ್ಯ ಕಲಿಕೆಯ ಉದ್ದೇಶಗಳು:

The course (22KSK17/27) will enable the students,

**SEE : 50** 

- 1. ಪದವಿ ವಿದ್ಯಾರ್ಥಿಗಳಾಗಿರುವುದರಿಂದ ಕನ್ನಡ ಭಾಷೆ, ಸಾಹಿತ್ಯ ಮತ್ತು ಸಂಸ್ಕೃತಿಯ ಪರಿಚಯ ಮಾಡಿಕೊಡುವುದು.
- 2. ಕನ್ನಡ ಸಾಹಿತ್ಯದ ಪ್ರಧಾನ ಭಾಗವಾದ ಆಧುನಿಕಪೂರ್ವ ಮತ್ತು ಆಧುನಿಕ ಕಾವ್ಯಗಳನ್ನು ಪರಿಚಯಿಸಿವುದು.
- ವಿದ್ಯಾರ್ಥಿಗಳಲ್ಲಿ ಸಾಹಿತ್ಯ ಮತ್ತು ಸಂಸ್ಕೃತಿಯ ಬಗ್ಗೆ ಅರಿವು ಹಾಗೂ ಆಸಕ್ತಿಯನ್ನು ಮೂಡಿಸುವುದು.
- 4. ತಾಂತ್ರಿಕ ವ್ಯಕ್ತಿಗಳ ಪರಿಚಯವನ್ನು ಹಾಗೂ ಅವರುಗಳ ಸಾಧಿಸಿದ ವಿಷಯಗಳನ್ನು ಪರಿಚಯಿಸುವುದು.
- 5. ಸಾಂಸ್ಕೃತಿಕ, ಜನಪದ ಹಾಗೂ ಪ್ರವಾಸ ಕಥನಗಳ ಪರಿಚಯ ಮಾಡಿಕೊಡುವುದು.

	ಘಟಕ -1 ಕನ್ನಡ ಸಂಸ್ಕೃತಿ ಮತ್ತು ಭಾಷೆ ಕುರಿತಾದ ಲೇಖನಗಳು (03 hours of pedagogy)
1.	ಕರ್ನಾಟಕ ಸಂಸ್ಕೃತಿ - ಹಂಪ ನಾಗರಾಜಯ್ಯ
1	ಕರ್ನಾಟಕದ ಏಕೀಕರಣ : ಒಂದು ಅಪೂರ್ವ ಚರಿತ್ರೆ - ಜಿ. ವೆಂಕಟಸುಬ್ಬಯ್ಯ
	ಆಡಳಿತ ಭಾಷೆಯಾಗಿ ಕನ್ನಡ - ಡಾ. ಎಲ್. ತಿಮ್ಮೇಶ ಮತ್ತು ಪ್ರೋ. ವಿ. ಕೇಶವಮೂರ್ತಿ
	ಘಟಕ - 2 ಆಧುನಿಕ ಪೂರ್ವದ ಕಾವ್ಯ ಭಾಗ (03 hours of pedagogy)
1.	ವಚನಗಳು : ಬಸವಣ್ಣ, ಅಕ್ಕಮಹಾದೇವಿ, ಅಲ್ಲಮಪ್ರಭು, ಆಯ್ಥಕ್ಕಿ ಮಾರಯ್ಯ,
	ಜೇಡರದಾಸಿಮಯ್ಯ, ಆಯ್ದಕ್ಕಿ ಲಕ್ಕಮ್ಮ.
2.	ಕೀರ್ತನೆಗಳು : ಅದರಿಂದೇನು ಫಲ ಇದರಿಂದೇನು ಫಲ – ಪುರಂದರದಾಸರು
	ತಲ್ಲಣಿಸದಿರು ಕಂಡ್ಯ ತಾಳು ಮನವೇ - ಕನಕದಾಸರು
3.	ತತ್ವಪದಗಳು : ಸಾವಿರ ಕೊಡಗಳ ಸುಟ್ಟು - ಶಿಶುನಾಳ ಶರೀಫ
	ಘಟಕ -3 ಆಧುನಿಕ ಕಾವ್ಯಭಾಗ (03 hours of pedagogy)
1.	ಡಿವಿಜಿ ರವರ ಮಂಕುತಿಮ್ಮನ ಕಗ್ಗದಿಂದ ಅಯ್ದ ಕೆಲವು ಭಾಗಗಳು
2.	ಕುರುಡು ಕಾಂಚಾಣ : ದಾ.ರಾ. ಬೇಂದ್ರೆ
3.	ಹೊಸಬಾಳಿನ ಗೀತೆ : ಕುವೆಂಪು
	ಘಟಕ - 4 ತಾಂತ್ರಿಕ ವ್ಯಕ್ತಿಗಳ ಪರಿಚಯ (03 hours of pedagogy)
1.	ಡಾ. ಸರ್. ಎಂ. ವಿಶ್ವೇಶ್ವರಯ್ಯ : ವ್ಯಕ್ತಿ ಮತ್ತು ಐತಿಹ್ಯ – ಎ. ಎನ್. ಮೂರ್ತಿರಾವ್
2.	ಕರಕುಶಲ ಕಲೆಗಳು ಮತ್ತು ಪರಂಪರೆಯ ವಿಜ್ಞಾನ : ಕರೀಗೌಡ ಬೀಚನಹಳ್ಳಿ
	ಘಟಕ - 5 ಸಾಂಸ್ಕೃತಿಕ, ಜನಪದ ಕಥೆ ಮತ್ತು ಪ್ರವಾಸ ಕಥನ (03 hours of pedagogy)
1	ಯುಗಾದಿ : ವಸುಧೇಂದ್ರ
	ಮೆಗಾನೆ ಎಂಬ ಗಿರಿಜನ ಪರ್ವತ : ಹಿ.ಚಿ. ಬೋರಲಿಂಗಯ್ಯ
	outcome (Course Skill Set)
	ೃತಿಕ ಕನ್ನಡ (22KSK17/27) ಪಠ್ಯ ಕಲಿಕೆಯ ನಂತರ ವಿದ್ಯಾರ್ಥಿಗಳಲ್ಲಿ :
	nd of the course the student will be able to:
C01	ಕನ್ನಡ ಭಾಷೆ, ಸಾಹಿತ್ಯ ಮತ್ತು ಕನ್ನಡದ ಸಂಸ್ಕೃತಿಯ ಕುರಿತು ಅರಿವು ಮೂಡಿರುತ್ತದೆ.
C02	ಕನ್ನಡ ಸಾಹಿತ್ಯದ ಆಧುನಿಕ ಪೂರ್ವ ಮತ್ತು ಆಧುನಿಕ ಕಾವ್ಯಗಳನ್ನು ಸಾಂಕೇತಿಕವಾಗಿ ಕಲಿತು ಹೆಚ್ಚಿನ ಓದಿಗೆ
	ಮತ್ತು ಜ್ಮಾನಕ್ಕೆ ಸ್ಪೂರ್ತಿ ಮೂಡುತ್ತದೆ.
CO3	ವಿದ್ಯಾರ್ಥಿಗಳಲ್ಲಿ ಸಾಹಿತ್ಯ ಮತ್ತು ಸಂಸ್ಕೃತಿಯ ಬಗ್ಗೆ ಅರಿವು ಹಾಗೂ ಆಸಕ್ತಿಯನ್ನು ಹೆಚ್ಚಾಗುತ್ತದೆ.
CO4	ತಾಂತ್ರಿಕ ವ್ಯಕ್ತಿಗಳ ಪರಿಚಯ ಹಾಗೂ ಅವರುಗಳ ಸಾಧಿಸಿದ ವಿಷಯಗಳನ್ನು ತಿಳಿದುಕೊಂಡು ನಾಡಿನ ಇನ್ನಿತರ
	ವ್ಯಕ್ತಿಗಳ ಬಗ್ಗೆ ತಿಳಿದುಕೊಳ್ಳಲು ಕೌತುಕತೆ ಹೆಚ್ಚಾಗುತ್ತದೆ.
C05	ಸಾಂಸ್ಕೃತಿಕ, ಜನಪದ ಹಾಗೂ ಪ್ರವಾಸ ಕಥನಗಳ ಪರಿಚಯ ಮಾಡಿಕೊಡುವುದು.

#### Pattern of question paper

4. SEE Paper shall be set for 50 questions, each carrying 1 mark. The pattern of the question paper is MCQ

University Prescribed Textbook :					
ಸಾಂಸ್ಕೃತಿಕ ಕನ್ನಡ					
ಡಾ. ಹಿ.ಚಿ.ಬೋರಲಿಂಗಯ್ಯ ಮತ್ತು ಡಾ. ಎಲ್. ತಿಮ್ಮೇಶ,					
ಪ್ರಕಟಣೆ : ಪ್ರಸಾರಾಂಗ,					
ವಿಶ್ವೇಶ್ವರಯ್ಯ ತಾಂತ್ರಿಕ ವಿಶ್ವವಿದ್ಯಾಲಯ, ಬೆಳಗಾವಿ.					
ವಿಶೇಷ ಸೂಚನೆ : 1. ಮೇಲಿನ ಪಠ್ಯಕ್ರಮಕ್ಕೆ ಸೀಮಿತವಾಗಿ ಅಂತಿಮ ಪರೀಕ್ಷೆಯ ಪ್ರಶ್ನೆಪತ್ರಿಕೆ ಇರುತ್ತದೆ.					
2. ಮೇಲಿನ ಪಠ್ಯಕ್ರಮವನ್ನು ಹೊರತುಪಡಿಸಿದ ಸಾಂಸ್ಕೃತಿಕ ಕನ್ನಡ ಪಠ್ಯಪುಸ್ತಕದಲ್ಲಿನ ಉಳಿದ ಪದ್ಯ &					
ಗದ್ಯ ಭಾಗ ಹಾಗೂ ಇತರ ಲೇಖನಗಳನ್ನು ಹೆಚ್ಚುವರಿ ಪೂರಕ ಓದಿಗಾಗಿ ಬಳಸಿಕೊಳ್ಳಬಹುದು. ಅಂತಿಮ ಪರೀಕ್ಷೆಯಲ್ಲಿ ಈ ಪಾಠಗಳಿಂದ ಪ್ರಶ್ನೆಗಳನ್ನು ಕೇಳಲಾಗುವುದಿಲ್ಲ.					
<ol> <li>ಹೆಚ್ಚಿನ ಮಾಹಿತಿ ಮತ್ತು ವಿವರಣೆಗಳಿಗೆ ಡಾ. ಎಲ್. ತಿಮ್ಮೇಶ (9900832331) ಇವರನ್ನು ಸಂಪರ್ಕಿಸಿ.</li> </ol>					
<ol> <li>ಮಾದರಿ ಪ್ರಶ್ನೆ ಪತ್ರಿಕೆ, ಕೋರ್ಸ್ ಆಯ್ಕೆ ಮಾಹಿತಿ, ಅಧ್ಯಯನ ಸಾಮಗ್ರಿ &amp; ಬಹು ಆಯ್ಕೆ ಮಾದರಿಯ ಪ್ರಶ್ನೆಗಳ ಕೈಪಿಡಿಗಾಗಿ ವಿಶ್ವವಿದ್ಯಾಲಯದ ವೆಬ್ ಸೈಟ್ ನೋಡುವುದು.</li> </ol>					
Activity Based Learning (Suggested Activities in Class)/ Practical Based learning					
<ul> <li>Contents related activities (Activity-based discussions)</li> </ul>					
<ul> <li>For active participation of students instruct the students to prepare Flowcharts and Handouts</li> </ul>					
<ul> <li>Organising Group wise discussions Connecting to placement activities</li> </ul>					

✓ Quizzes and Discussions, Seminars and assignments.

# ಬಳಕೆ ಕನ್ನಡ - baLake Kannada (Kannada for Usage)

# ಕನ್ನಡ ಕಲಿಕೆಗಾಗಿ <u>ನಿಗದಿ</u>ಪಡಿಸಿದ ಪಠ್ಯಪುಸ್ತಕ - (Prescribed Textbook to Learn Kannada)

Subject Code	Subject		Stream	Th– Tut-Pr	Credits
22KBK17 / 27	BALAKE KA	NNADA	Humanities and Social Sciences (H.S.S)	1 - 0 - 0	01
CIE : 50	SEE : 50	SEE :	1 hours 30 Minute	es	Total

# Course objectives : ಬಳಕೆ ಕನ್ನಡ ಪಠ್ಯ ಕಲಿಕೆಯ ಉದ್ದೇಶಗಳು:

The course (22KBK17/27) will enable the students,

- 1. To Create the awareness regarding the necessity of learning local language for comfortable and healthy life.
- 2. To enable learners to Listen and understand the Kannada language properly.
- 3. To speak, read and write Kannada language as per requirement.
- 4. To train the learners for correct and polite conservation.
- 5. To know about Karnataka state and its language, literature and General information about this state.

# Course outcome (Course Skill Set)

# ಬಳಕೆ ಕನ್ನಡ ಪಠ್ಯ ಕಲಿಕೆಯಿಂದ ವಿದ್ಯಾರ್ಥಿಗಳಿಗೆ ಆಗುವ ಅನುಕೂಲಗಳು ಮತ್ತು ಫಲಿತಾಂಶಗಳು:

At the end of the course the student will be able to:

C01	To understand the necessity of learning of local language for comfortable life.
C02	To speak, read and write Kannada language as per requirement.
CO3	To communicate (converse) in Kannada language in their daily life with kannada speakers.
CO4	To Listen and understand the Kannada language properly.
C05	To speak in polite conservation.

# Module - 1

#### (03 hours of pedagogy)

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

Module - 2	(03 hours of pedagogy)
<ol> <li>ನಾಮಪದಗಳ ಸಂಬಂಧಾರ್ಥಕ ರೂಪಗಳು, ಸಂದೇಹಾಸ್ಪದ ಕ</li> </ol>	ಪ್ರಶ್ನೆಗಳು ಮತ್ತು ಸಂಬಂಧವಾಚಕ
ನಾಮಪದಗಳು - Possessive forms of nouns, dubitive q	uestion and Relative nouns
<ol> <li>ಗುಣ, ಪರಿಮಾಣ ಮತ್ತು ವರ್ಣಬಣ್ಣ ವಿಶೇಷಣಗಳು, ಸಂಖ್ಯಾಪ</li> </ol>	ವಾಚಕಗಳು Qualitative, Quantitative and
Colour Adjectives, Numerals	
3. ಕಾರಕ ರೂಪಗಳು ಮತ್ತು ವಿಭಕ್ತಿ ಪ್ರತ್ಯಯಗಳು ⊸ಸಪ್ತಮಿ ವಿಭಕ್ತಿ ಪ್ರತ್ಯಯ – (ಆ, ಅಂ	ದು, ಅವು, ಅಲ್ಲಿ) –Predictive Forms, Locative Case
Module - 3	(03 hours of pedagogy)
l. ಚತುರ್ಥಿ ವಿಭಕ್ತಿ ಪ್ರತ್ಯಯದ ಬಳಕೆ ಮತ್ತು ಸಂಖ್ಯಾವಾಚಕಗಳು - Dative Case	s, and Numerals
2. ಸಂಖ್ಯಾಗುಣವಾಚಕಗಳು ಮತ್ತು ಬಹುವಚನ ನಾಮರೂಪಗಳು -Ordinal nu	merals and Plural markers
<ol> <li>ನ್ಯೂನ/ನಿಷೇಧಾರ್ಥಕ ಕ್ರಿಯಾಪದಗಳು &amp; ವರ್ಣ ಗುಣವಾಚಕಗಳು – Defecti</li> </ol>	ve/Negative Verbs & Colour Adjectives
Module- 4	(03 hours of pedagogy)
1. ಅಪ್ಪಣೆ / ಒಪ್ಪಿಗೆ, ನಿರ್ದೇಶನ, ಪ್ರೋತ್ಸಾಹ ಮತು ಒತ್ತಾಯ ಆರ್ಥರ	ೊಪ ಪದಗಳು ಮತ್ತು ವಾಕ್ಯಗಳು
Permission, Commands, encouraging and Urging words (Impe	rative words and sentences)
2. ಸಾಮಾನ್ಯ ಸಂಭಾಷಣೆಗಳಲ್ಲಿ ದ್ವಿತೀಯ ವಿಭಕ್ತಿ ಪ್ರತ್ಯಯಗಳು ಮತ	ಟ್ತ ಸಂಭವನೀಯ ಪ್ರಕಾರಗಳು
Accusative Cases and Potential Forms used in General Commun	ication
3. "ಇರು ಮತ್ತು ಇರಲ್ಲ" ಸಹಾಯಕ ಕ್ರಿಯಾಪದಗಳು, ಸಂಭಾವ್ಯಸೂಬ	ಕಕ ಮತ್ತು ನಿಷೇಧಾರ್ಥಕ ಕ್ರಿಯಾ ಪದಗಳು -
Helping Verbs "iru and iralla", Corresponding Future and Negatio	n Verbs
<ol> <li>ಹೋಲಿಕೆ (ತರತಮ), ಸಂಬಂಧ ಸೂಚಕ, ವಸ್ತು ಸೂಚಕ ಪ್ರತ್ಯಯ</li> </ol>	ಂಗಳು ಮತ್ತು ನಿಷೇಧಾರ್ಥಕ ಪದಗಳ ಬಳಕೆ-
Comparitive, Relationship, Identification and Negation Words	
Module - 5	(03 hours of pedagogy)
1. ಕಾಲ ಮತ್ತು ಸಮಯದ ಹಾಗೂ ಕ್ರಿಯಾಪದಗಳ ವಿವಿಧ ಪ್ರಕಾರಗಳ	-Different types of Tense. Time and Verbs
2. ದ್, -ತ್, - ತು, - ಇತು, - ಆಗಿ, - ಅಲ್ಲ, - ಗ್, -ಕ್, ಇದೆ, ಕ್ರಿಯಾ ಪ್ರತ್ಯಂ	
ವರ್ತಮಾನ ಕಾಲ ವಾಕ್ಯ ರಚನೆ - Formation of Past, Future and	
3. Kannada Vocabulary List :ಸಂಭಾಷಣೆಯಲ್ಲಿ ದಿನೋಪಯೋಗಿ ಕನ್ನ	್ನಡ ಪದಗಳು -Kannada Words in Conversation
University Prescribed Textbook :	
<ul> <li>Construction of the second state of the second state</li></ul>	
ಬಳಕೆ ಕನ್ನಡ	
ಡಾ. ಎಲ್. ತಿಮ್ಮೇಶ	
ಪ್ರಕಟಣೆ : ಪ್ರಸಾರಾಂ	ಗ,
ವಿಶ್ವೇಶ್ವರಯ್ಯ ತಾಂತ್ರಿಕ ವಿಶ್ವವಿದ್ಯಾಲ	ುಯ, ಬೆಳಗಾವಿ.
ಸೂಚನೆ :	
	ಯ ಪ್ರಶ್ನೆಪತ್ರಿಕೆ ಇರುತ್ತದೆ.
ವಿಶೇಷ ಸೂಚನೆ : 1. ಮೇಲಿನ ಪಠ್ಯಕ್ರಮಕ್ಕೆ ಸೀಮಿತವಾಗಿ ಅಂತಿಮ ಪರೀಕ್ಷೇ	
ವಿಶೇಷ ಸೂಚನೆ : 1. ಮೇಲಿನ ಪಠ್ಯಕ್ರಮಕ್ಕೆ ಸೀಮಿತವಾಗಿ ಅಂತಿಮ ಪರೀಕ್ಷೆ 2. ಮೇಲಿನ ಪಠ್ಯಕ್ರಮವನ್ನು ಹೊರತುಪಡಿಸಿದ ಬಳಕೆ ಕನ	ನ್ನಡ ಪಠ್ಯಪುಸ್ತಕದಲ್ಲಿನ ಉಳಿದ ಭಾಗಳನ್ನು
ವಿಶೇಷ ಸೂಚನೆ : 1. ಮೇಲಿನ ಪಠ್ಯಕ್ರಮಕ್ಕೆ ಸೀಮಿತವಾಗಿ ಅಂತಿಮ ಪರೀಕ್ಷೆ. 2. ಮೇಲಿನ ಪಠ್ಯಕ್ರಮವನ್ನು ಹೊರತುಪಡಿಸಿದ ಬಳಕೆ ಕಂ ಹೆಚ್ಚುವರಿ ಪೂರಕ ಓದಿಗಾಗಿ ಬಳಸಿಕೊಳ್ಳಬಹುದು. ಅ	ನ್ನಡ ಪಠ್ಯಪುಸ್ತಕದಲ್ಲಿನ ಉಳಿದ ಭಾಗಳನ್ನು
ವಿಶೇಷ ಸೂಚನೆ : 1. ಮೇಲಿನ ಪಠ್ಯಕ್ರಮಕ್ಕೆ ಸೀಮಿತವಾಗಿ ಅಂತಿಮ ಪರೀಕ್ಷೆ 2. ಮೇಲಿನ ಪಠ್ಯಕ್ರಮವನ್ನು ಹೊರತುಪಡಿಸಿದ ಬಳಕೆ ಕನ	ನ್ನಡ ಪಠ್ಯಪುಸ್ತಕದಲ್ಲಿನ ಉಳಿದ ಭಾಗಳನ್ನು
ವಿಶೇಷ ಸೂಚನೆ : 1. ಮೇಲಿನ ಪಠ್ಯಕ್ರಮಕ್ಕೆ ಸೀಮಿತವಾಗಿ ಅಂತಿಮ ಪರೀಕ್ಷೆ 2. ಮೇಲಿನ ಪಠ್ಯಕ್ರಮವನ್ನು ಹೊರತುಪಡಿಸಿದ ಬಳಕೆ ಕನ ಹೆಚ್ಚುವರಿ ಪೂರಕ ಓದಿಗಾಗಿ ಬಳಸಿಕೊಳ್ಳಬಹುದು. ಅ ಪ್ರಶ್ನೆಗಳನ್ನು ಕೇಳಲಾಗುವುದಿಲ್ಲ.	ನ್ನಡ ಪಠ್ಯಪುಸ್ತಕದಲ್ಲಿನ ಉಳಿದ ಭಾಗಳನ್ನು ಂತಿಮ ಪರೀಕ್ಷೆಯಲ್ಲಿ ಈ ಪಾಠಗಳಿಂದ
ವಿಶೇಷ ಸೂಚನೆ : 1. ಮೇಲಿನ ಪಠ್ಯಕ್ರಮಕ್ಕೆ ಸೀಮಿತವಾಗಿ ಅಂತಿಮ ಪರೀಕ್ಷೆ. 2. ಮೇಲಿನ ಪಠ್ಯಕ್ರಮವನ್ನು ಹೊರತುಪಡಿಸಿದ ಬಳಕೆ ಕನ ಹೆಚ್ಚುವರಿ ಪೂರಕ ಓದಿಗಾಗಿ ಬಳಸಿಕೊಳ್ಳಬಹುದು. ಅ ಪ್ರಶ್ನೆಗಳನ್ನು ಕೇಳಲಾಗುವುದಿಲ್ಲ. 	ನ್ನಡ ಪಠ್ಯಪುಸ್ತಕದಲ್ಲಿನೆ ಉಳಿದ ಭಾಗಳನ್ನು ಂತಿಮ ಪರೀಕ್ಷೆಯಲ್ಲಿ ಈ ಪಾಠಗಳಿಂದ ಬ್ಬೇಶ (9900832331) ಇವರನ್ನು ಸಂಪರ್ಕಿಸಿ.
ವಿಶೇಷ ಸೂಚನೆ : 1. ಮೇಲಿನ ಪಠ್ಯಕ್ರಮಕ್ಕೆ ಸೀಮಿತವಾಗಿ ಅಂತಿಮ ಪರೀಕ್ಷೆ 2. ಮೇಲಿನ ಪಠ್ಯಕ್ರಮವನ್ನು ಹೊರತುಪಡಿಸಿದ ಬಳಕೆ ಕನ ಹೆಚ್ಚುವರಿ ಪೂರಕ ಓದಿಗಾಗಿ ಬಳಸಿಕೊಳ್ಳಬಹುದು. ಅ ಪ್ರಶ್ನೆಗಳನ್ನು ಕೇಳಲಾಗುವುದಿಲ್ಲ.	ನ್ನಡ ಪಠ್ಯಪುಸ್ತಕದಲ್ಲಿನ ಉಳಿದ ಭಾಗಳನ್ನು ಂತಿಮ ಪರೀಕ್ಷೆಯಲ್ಲಿ ಈ ಪಾಠಗಳಿಂದ ಬ್ಮೀಶ (9900832331) ಇವರನ್ನು ಸಂಪರ್ಕಿಸಿ. ಯನ ಸಾಮಗ್ರಿ & ಬಹು ಆಯ್ಕೆ ಮಾದರಿಯ

Pattern of question paper6. SEE Paper shall be set for 50 questions, each carrying 1 mark. The pattern of the question paper is MCQ

		INNOVATION and DESIGN THINKIN	١G	
Subje	ect code	21IDT18/28	Credit: 01	
Hours	s/Week:	1 hour. (Theory)	SEE: 50 Marks	
Total h	nours: 25	CIE: 50 Marks	SEE: 2 hours	
		MODULES		Hours
PROCESS OF I	DESIGN	Module-I		
Understanding				
		- Theory and practice in Design thinking	g – Explore presentation signers	
	IVP or Prototyping		,prore presentation organite	
-		he design thinking: Chalk and Talk method	1	
Learning		through presentation MVP and Prototyping		
Process	through live example		2	
1000000	unough n'e enumpte	Module-II		
Tools for Design	n Thinking			
		and analysis – Enabling efficient collaboratio	n in digital space – Empathy for	
	ration in distributed I			
Teaching-	Case studies on des	sign thinking for real-time interaction and a	analysis Simulation exercises for	
Learning	collaborated enabled			
Process		e success of collaborated design thinking		
	•	Module-III		
Design Think	ing in IT			
	g to Business Proces	ss modeling – Agile in Virtual collaboratio	n environment – Scenario based	
Prototyping				
Teaching-	Case studies on des	sign thinking and business acceptance of the	design Simulation on the role of	
Learning	virtual eco-system f	or collaborated prototyping		
Process				
		Module -IV		
DT For strategi				
		- Strategic Foresight - Change - Sense Mal		
Value redefinition - Extreme Competition – experience design - Standardization – Humanization - Creative Culture – Rapid prototyping, Strategy and Organization – Business Modeldesign.				
- Rapid prototyp		mples of successful designs		
Learning		tudents on the success of design Live project	on design thinking in a group of 4	
-	students	tudents on the success of design Live project	on design uninking in a group of 4	
1100035	students	Module-V		
Design thinking	workshop Design Thi	nking Work shop Empathize, Design, Ideate, T	Prototype and Test	
Teaching-	8 hours design thin	king workshop from the expect and then pr	esentation by the students on the	
Learning	learning from the w	• • • •	esentation by the students on the	
Process	is in the week of the second s	5P		
Text book:				
	R.Karsnitz, Stephen O'Brie n, 2013.	n and John P. Hutchinson, "Engineering Design", Cengag	elearning (International edition) Second	
		isiness: Why Design Thinking is the Next Competitive Ad	lvantage", Harvard Business Press, 2009.	
		l and Larry Leifer (eds), "Design Thinking: Understand –		
	ly", Springer, 2011			
2013.		for Strategic Innovation: What They Can't Teach You at B	Businessor Design School", John Wiley & So	ons
Reference books:				
		in, "Engineering Design Process", CengageLearning, Sec		C
		esign Thinking - Ten Stories of What Works (Columbia I ), Andrew King (Author), Kevin Bennett (Author).	Business School Publishing) Hardcover – 20	Sep
Course outcome (C		, and a rang (runor), revin Denneu (runor).		
	ourse the student will be al			
	preciate various design pro	cess procedure i ideas through differenttechnique		
		reverse Engineering to Understand products		—
	w technical drawing for de			

		natics-II for Mechanical En		
	- 1	e Based Credit System (CBC m the academic year 2022-23		
	Course Code	22MATM21	CIE Marks	50
	Credits	04	SEE Marks	50
	Course Type	Integrated		
	Contact Hours/Week (L-T-P)	2-2-2	Total Marks	100
	Contact Hours of Pedagogy	42 hours Theory +10 Lab slots	Exam Hours	03
	Module-1 Vect ction to Vector Calculus in Mechani Differentiation: Scalar and vector field	cal Engineering application		
livergen Vector I	ice - physical interpretation, solenoidal Integration: Line integrals, Surface in tement of Green's theorem and Stoke'	and irrotational vector field tegrals. Applications to work	s. Problems.	
Applicat	<b>dy:</b> Volume integral and Gauss diverg <b>tions:</b> Heat and mass transfer, oil refin and acceleration of a moving particle.	ery problems, environmenta		f streamlines,
	Module-2 Ordinary Differentia			
	nce of higher-order ordinary differe			ations.
	order linear ODEs with constant coefficient			
	of parameters, Cauchy's and Legendr			
	dy: Formulation and solution of Canti	lever beam. Finding the solu	tion by the method of	
	nined coefficients.	issian lines. History on sin	order to DDT Lorder L1	1.2 and 1.2)
арриса	tions: Oscillations of a spring, Transm			L2 and L3)
	Module-3 Partial Differentia		(5L+3T)	
	nce of partial differential equations			DDE hardin
	on of PDE's by elimination of arbitrary			
	on. Homogeneous PDEs involving der			. Solution of
	e's linear PDE. Derivation of one-dime			
	<b>dy:</b> Solution of one-dimensional heat on of variables.	equation and wave equation	by the method of	
1	tions: Design of structures (vibration of	frod/mombrono( <b>DDT</b> I avo	la I 1 I 2 and I 2)	
аррпса	tions: Design of structures (vibration of	of rod/memorane( <b>KD1 Leve</b>	IS: L1, L2 and L5)	
	-4 Numerical Methods -1	(6L+3T)		
-	nce of numerical methods for discre		8 8	
	of algebraic and transcendental equati			
	s. Finite differences, Interpolation usir			ae, Newton's
	difference and Lagrange's interpolation			
	cal integration: Trapezoidal, Simpson'		vithout proof),Examples	
	dy: Bisection method, Lagrange's invo			
	tions: Estimating the approximate root			Finding
pproxin	nate solutions to Mechanical engineeri			<b>AT</b> `
<del>-</del>		e-5 Numerical Methods -2	(5L+	,
	ction to various numerical technique			
	cal Solution of Ordinary Differential			
-	s of first order and first degree – Taylo		-	Kutta method
	der and Milne's predictor-corrector fo	rmula (No derivations of for	mulae). Problems.	
	<ul><li>dy: Adam-Bashforth method.</li><li>tions: Finding approximate solutions t</li></ul>	o ODE related to Machanica	l anainaanina fialda	

	Finding gradient, divergent, curl and their geometrical interpretation
	Verification of Green's theorem
3	Solutions of Second-order ordinary differential equations with initial/boundary conditions
	Solution of a differential equation of oscillations of a spring/deflection of a beam with different loads
5	Solution of one-dimensional heat equation and wave equation
6	Solution of algebraic and transcendental equations by Regula-Falsi and Newton-Raphson method
7	Interpolation/Extrapolation using Newton's forward and backward difference formula
8	Computation of area under the curve using Trapezoidal, Simpson's (1/3) <sup>rd</sup> and (3/8) <sup>th</sup> rule
9	Solution of ODE of first order and first degree by Taylor's series and Modified Euler's method
10	Solution of ODE of first order and first degree by Runge-Kutta 4th order and Milne's predictor-corrector method
Sugg	ested software's: Mathematica/MatLab/Python/Scilab

At the end of the course the student will be able to:

CO 1	Understand the applications of vector calculus refer to solenoidal, irrotational vectors, line integral and surface integral.
CO 2	Analyze the solution of higher order ordinary differential equations
CO 3	Demonstrate partial differential equations and their solutions for physical interpretations.
CO 4	Apply the knowledge of numerical methods in solving physical and engineering
	phenomena.
CO 5	Get familiarize with modern mathematical tools namely
	Mathematica/MatLab/Python/Scilab

#### Suggested Learning Resources:

#### Books (Title of the Book/Name of the author/Name of the publisher/Edition and Year) Text Books

1. **B. S. Grewal**: "Higher Engineering Mathematics", Khanna publishers, 44th Ed., 2021.

2. E. Kreyszig: "Advanced Engineering Mathematics", John Wiley & Sons, 10th Ed., 2018.

#### **Reference Books**

1. V. Ramana: "Higher Engineering Mathematics" McGraw-Hill Education, 11th Ed.,	2017
2. Srimanta Pal & Subodh C. Bhunia: "Engineering Mathematics" Oxford University	Press,3rd Ed.,
2016.	
3. N.P Bali and Manish Goyal: "A textbook of Engineering Mathematics" Laxmi	
Publications, 10th Ed., 2022.	
4. C. Ray Wylie, Louis C. Barrett: "Advanced Engineering Mathematics" McGraw –	Hill Book Co.,
Newyork, 6th Ed., 2017.	
5. Gupta C.B, Sing S.R and Mukesh Kumar: "Engineering Mathematic for Semester I	and II", Mc-Graw
Hill Education(India) Pvt. Ltd 2015.	
6. H. K. Dass and Er. Rajnish Verma: "Higher Engineering Mathematics" S. Chand	
Publication, 3rd Ed., 2014.	
7. James Stewart: "Calculus" Cengage Publications, 7th Ed., 2019.	
8. David C Lay: "Linear Algebra and its Applications", Pearson Publishers, 4th Ed., 2018.	
9. Gareth Williams: "Linear Algebra with applications", Jones Bartlett Publishers Inc., 6th	
Ed., 2017.	

Course Title:	Chemistry for MechanicalEngineering stream		
Course Code:	22CHEM12/22	CIE Marks	50
Course Type		SEE Marks	50
(Theory/Practical/Integrated)	Integrated	Total Marks	100
Teaching Hours/Week (L:T:P:S) <sup>1</sup>	2:2:2:0	ExamHours	03+02
Total Hours of Pedagogy	40 hours Theory +10 to12 Lab slots	Credits	04
Madula	1. Enouge Course Conversion and Ston	a a a ( <b>0</b> h m)	-

#### Module-1: Energy; Source, Conversion and Storage (8 hr)

**Fuels:** Introduction, calorific value, determination of calorific value using bombcalorimeter, numerical problems on GCV and NCV.

Green fuels: Introduction, power alcohol, synthesis and applications of biodiesel.

**High energy fuels:** Production of hydrogen by electrolysis of water and its advantages. **Energy devices:** Introduction, construction, working, and applications of Li-ion, Na-ion,Li-MnO2 battery and methanol-oxygen fuel cell.

Self-learning: Plastic recycling to fuels and its monomers or other useful products.

#### Module-2: Corrosion Science and Engineering (8 hr)

**Corrosion:** Introduction, mechanism of electrochemical corrosion with iron as an example, types (differential metal and aeration), Stress corrosion. Factors affecting corrosion (EMF, Temperature, pH, relative area of anode and cathode and polarization).

**Corrosion control:** Metal coating-galvanization, surface conversion coating-anodization and cathodic protection-sacrificial anode method. Corrosion testing by weight loss method.

Metal finishing: Introduction, technological importance. Electroplating: Introduction,

Electroplating of chromium. Electroless plating: Introduction, electroless plating of nickel.

**Self-learning:** Electroless plating of copper in the manufacture of PCB.

Module-3: Macromolecules for Engineering Applications (8 hr)

**Polymers**: Introduction, methods of polymerization (Condensation and Freeradical), Techniques of addition polymerization, molecular weight; number average and weight average, numerical problems. Synthesis, properties and industrial applications of polyvinylchloride (PVC) and polystyrene.

**Conducting polymers** – synthesis and conducting mechanism of Polyacetylene.

Fibers: Introduction, synthesis, properties and industrial applications of Kevlar and Polyester.

**Plastics:** Introduction, synthesis, properties and industrial applications of poly(methyl methacrylate) (PMMA) and Teflon.

Polymer composites: Introduction, properties and applications of fiber reinforcedpolymers composites (FRPC).

**Self-learning:** Biodegradable polymer: Introduction, synthesis, properties and applications of polylactic acid (PLA), introduction, classification, properties and application of lubricants.

Module-4: Phase Rule and Analytical Techniques (8 hr)

**Phase rule:** Introduction, Definition of terms: phase, components, degree of freedom, phase rule equation. Phase diagram: Two component-lead-silver system.

Analytical techniques: Introduction, principle, instrumentation of potentiometric sensors; its application in the estimation of iron, Coductometric Titration of strong acid versus strong base, Optical sensors (colorimetry); its application in the estimation of the copper, pH-sensor (Glass electrode); its application in the determination of pH of beverages.

Self-learning: Determination of viscosity of biofuel and its correlation with temperature.

Module-5: Water technology and Nanotechnology (8 hr)

**Water technology:** Introduction, sources and nature of impurities of water, hardness of water, determination of temporary, permanent and total hardness by EDTA method, numerical problems, softening of water by Lime-Soda Process, determination of COD, numerical problems. Purification of water by Reverse osmosis and chlorination methods.

**Nanotechnology:** Introduction, properties and engg. application of carbon nanotubes, grapheme and nanomaterials for water treatment(metal oxide)

Self-learning:Introduction, classification, properties and application of silicon carbide.

PRACTICAL MODULE			
A – Demonstration (any two) offline/virtual:			
A1. Synthesis of polyurethane			
A2. Preparation of urea formaldehyde resinA3.			
Synthesis of iron oxide nanoparticles A4. Determination			
of acid value of biofuel			
<u>B-Exercise (compulsorily any 4 to be conducted):</u>			
B1. Conductometric estimation of acid mixture			
B2. Potentiometric estimation of FAS using K2Cr2O7			
B3. Determination of pKa of vinegar using pH sensor (Glass electrode) B4. Determination of rate of corrosion of mild steel by weight loss methodB5. Estimation of total			
hardness of water by EDTA method			
C – Structured Enquiry (compulsorily any 4 to be conducted):			
C1. Estimation of Copper present in electroplating effluent by optical sensor (colorimetry)C2. Determination of			
Viscosity coefficient of lubricant (Ostwald's viscometer)			
C3. Estimation of iron in TMT bar by diphenyl amine/external indicator method C4. Estimation of Sodium			
present in soil/effluent sample using flame photometry			
C5. Determination of Chemical Oxygen Demand (COD) of industrial waste water sample			
<u>D – Open Ended Experiments (any two):</u>			
D1. Estimation of percentage of iron in steel			
D2. Electroplating of desired metal on substrateD3. Synthesis of			
biodiesel			
D4. Synthesis of Aluminium Oxide nano particle			
<b>CO1.</b> Identify the terms and applications processes involved in scientific and engineering			
CO2. Explain the phenomena of chemistry to describe the methods of engineering			
processes			
<b>CO3.</b> Solve the problems in chemistry that are pertinent in engineering applications			
<b>CO4.</b> Apply the basic concepts of chemistry to explain the chemical properties and processes			
<b>CO5.</b> Analyze properties and multidisciplinary situations processes associated with chemical substances in			
Suggested Learning Resources:			
Books (Title of the Book/Name of the author/Name of the publisher/Edition and Year)			
1. Wiley Engineering Chemistry, Wiley India Pvt. Ltd. New Delhi, 2013- 2 <sup>nd</sup> Edition.			
<ol> <li>Whey Engineering Chemistry, Whey India I V. Ed. New Denn, 2013-2 Edition.</li> <li>Engineering Chemistry, Satyaprakash &amp; Manisha Agrawal, Khanna Book Publishing, Delhi</li> </ol>			
<ol> <li>A Text Book of Engg. Chemistry, Shashi Chawla, Dhanpat Rai &amp; Co. (P) Ltd.</li> </ol>			
<ol> <li>4. Essentials of Physical Chemistry, Bahl&amp;Tuli, S.Chand Publishing</li> </ol>			
5. Applied Chemistry, Sunita Rattan, Kataria 5. Engineering Chemistry, Baskar, Wiley			
<ol> <li>Engineering Chemistry – I, D. Grour Krishana, Vikas Publishing</li> </ol>			
7. A Text book of Engineering Chemistry, SS Dara & Dr. SS Umare, S Chand & Company Ltd., 12 <sup>th</sup>			
Edition, 2011.			
8. A Text Book of Engineering Chemistry, R.V. Gadag and Nityananda Shetty, I. K. InternationalPublishing			
house. 2 <sup>nd</sup> Edition, 2016.			
9. Text Book of Polymer Science, F.W. Billmeyer, John Wiley & Sons, 4th Edition, 1999.			
10. Nanotechnology A Chemical Approach to Nanomaterials, G.A. Ozin & A.C. Arsenault, RSCPublishing, 2005.			
11. Corrosion Engineering, M. G. Fontana, N. D. Greene, McGraw Hill Publications, New York, 3 <sup>rd</sup> Edition, 1996.			
1996. 12. Linden's Handbook of Batteries, Kirby W. Beard, Fifth Edition, McGraw Hill, 2019.			
<ol> <li>12. Linden's Handbook of Batteries, Kirby W. Beard, Fifth Edition, McGraw Hill, 2019.</li> <li>13. OLED Display Fundamentals and Applications, Takatoshi Tsujimura, Wiley–Blackwell, 2012</li> </ol>			
14. Supercapacitors: Materials, Systems, and Applications, Max Lu, Francois Beguin, Elzbieta Frackowiak,			
Wiley-VCH; 1st edition, 2013.			
15. "Handbook on Electroplating with Manufacture of Electrochemicals", ASIA PACIFIC BUSINESSPRESS			
Inc., 2017. Dr. H. Panda,			
16. Expanding the Vision of Sensor Materials. National Research Council 1995, Washington, DC: TheNational			
Academies Press. doi: 10.17226/4782.			
17. Engineering Chemistry, Edited by Dr. Mahesh B and Dr. Roopashree B, Sunstar Publisher, Bengaluru, ISBN 978-93-85155-70-3, 2022			
<ul> <li>18. High Performance Metallic Materials for Cost Sensitive Applications, F. H. Froes, et al. John Wiley&amp; Sons, 2010</li> </ul>			
19. Instrumental Methods of Analysis, Dr. K. R. Mahadik and Dr. L. Sathiyanarayanan, NiraliPrakashan, 2020			
17. Insuumentai memous oi Anarysis, Di. K. K. Manauk and Di. L. Sauffyähäräyähäll, Mitähriäkäsiläil, 2020			

- 20. Principles of Instrumental Analysis, Douglas A. Skoog, F. James Holler, Stanley R. Crouch SeventhEdition, Cengage Learning, 2020
- 21. Polymer Science, V R Gowariker, N V Viswanathan, Jayadev, Sreedhar, Newage Int. Publishers,4th Edition, 2021
- 22. Engineering Chemistry, P C Jain & Monica Jain, Dhanpat Rai Publication, 2015-16<sup>th</sup> Edition.
- 23. Nanostructured materials and nanotechnology, Hari Singh, Nalwa, academic press, 1st Edition, 2002.
- 24. Nanotechnology Principles and Practices, Sulabha K Kulkarni, Capital Publishing Company, 3rd Edition 2014
- 25. Principles of nanotechnology, Phanikumar, Scitech publications, 2<sup>nd</sup> Edition, 2010.
- Chemistry for Engineering Students, B. S. Jai Prakash, R. Venugopal, Sivakumaraiah & PushpaIyengar., Subash Publications, 5<sup>th</sup> Edition, 2014
- 27. "Engineering Chemistry", O. G. Palanna, Tata McGraw Hill Education Pvt. Ltd. New Delhi, FourthReprint, 2015.
- 28. Chemistry of Engineering materials, Malini S, K S Anantha Raju, CBS publishers Pvt Ltd.,

Laboratory Manual Engg. Chemistry, Anupma Rajput, Dhanpat Rai & Co.

Course Title:	<b>COMPUTER AIDED E</b>	NGINEERING DRAWING	
Course Code	22CED13/23	CIE Marks	50
Teaching Hour/Week (L:T:P:S)	2:0:2:0	SEE Marks	50
Total Hours of Teaching - Learning	40	Total Marks	100
Credits	03	Exam Hours	03
	Module-1		
Introduction: for CIE only			
Significance of Engineering drawing, B Scales. Introduction to Computer Aided 2D/3D environment. Selection of draw polylines, square, rectangle, polygons, chamfer, fillet and curves. <b>Orthographic Projections of Points, Li</b> Introduction to Orthographic projection projections of lines (Placed in First quad Orthographic projections of planes viz tr	I Drafting software, Co-ordinate s ring sheet size and scale. Comma splines, circles, ellipse, text, mov <b>nes and Planes:</b> ns: Orthographic projections of p rant only). tangle, square, rectangle, pentagon,	system and reference planes HP, VI ands and creation of Lines, coordin ve, copy, off-set, mirror, rotate, trin oints in 1st and 3rd quadrants. O	P, RPP & LPP hate points, axe n, extend, brea rthographic
First quadrant only using change of posit			
Application on projections of Lines & P	lanes (For CIE only) Module-2		
Orthographic Projection of Solids:	wiouule-2		
Orthographic projection of right regular Cylinders, Cones, Cubes. Projections of Frustum of cone and pyre			tagon, hexagor
	Module-3		
projection of combination of two simple Conversion of simple isometric drawing Problems on applications of Isometric pr Introduction to drawing views using 3D	<b>gs into orthographic views</b> . Dijections of simple objects / engined	ering components.	
Development of Lateral Surfaces of Se			
<b>Development of Lateral Surfaces of So</b> Development of lateral surfaces of right Development of lateral surfaces of their :	regular prisms, cylinders, pyramids frustums and truncations.	and cones resting with base on HP of	nly.
	Module-5		
Multidisciplinary Applications & Prac Free hand Sketching; True free hand,			
Simple Mechanisms; Bicycles, Tricycle Electric Wiring and lighting diagram system using suitable software Basic Building Drawing; Like, Archited Auto CAD or suitable software, Electronics Engineering Drawings- Lik Graphs & Charts: Like, Column chart,	s, Gear trains, Ratchets, two-wheele s; Like, Automatic fire alarm, Cat ctural floor plan, basic foundation d ce, Simple Electronics Circuit Draw	er cart & Four-wheeler carts todimens Il bell system, UPS system, Basic p rawing, steel structures- Frames, bric ings, practice on layers concept.	sions etc ower distributio ges,trusses usin
Simple Mechanisms; Bicycles, Tricycle Electric Wiring and lighting diagram system using suitable software Basic Building Drawing; Like, Archited Auto CAD or suitable software, Electronics Engineering Drawings- Lik	s, Gear trains, Ratchets, two-wheele s; Like, Automatic fire alarm, Cat etural floor plan, basic foundation d te, Simple Electronics Circuit Draw <u>Pie chart, Line charts, Gantt charts,</u> be able to: s with definite shape and dimension d size of objects through different v object	er cart & Four-wheeler carts todimens Il bell system, UPS system, Basic p rawing, steel structures- Frames, bric ings, practice on layers concept. etc. using Microsoft Excel or anysui	sions etc ower distributic ges,trusses usir

	Cours	e Title: INTRO	DUCTION TO	ELECTRICAL ENGINEERI	NG		
Course Code				22ESC142/242	CIE: 50		
Number of Lectu	re Hours/	Week	<b>3hours (Theory</b>		SEE: 50		
Total Number of	Lecture H	Iours		40	SEE Hou		
			Modules			Hours	
<u>Module - I</u> Introduction: Conventional and non-conventional energy resources; Power Generation: Hydel, Nuclear, Solar & wind power generation (Block Diagram approach). Electromagnetism: Faraday Laws of Electromagnetic Induction, Fleming's rules, Lenz's law, types of EMF and numerical.							
	1 12 .		Module - II		1. 1		
phase, phase diffe current relationsh Active power, rea	<b>A.C. Fundamentals:</b> Equation of AC Voltage and current, waveform, time period, frequency, amplitude, phase, phase difference, average value, RMS value, form factor, peak factor. (only definitions) Voltage and current relationship with phasor diagrams in R, L, and C circuits. Concept of Impedance. Analysis of R-L, Active power, reactive power and apparent power. Concept of power factor. (Simple Numerical). <b>Three Phase Circuits:</b> Advantages, three phase connections (Star & Delta) (Excluding Derivations).						
DC Machines:			<u>Module - III</u>				
Relation between	induced en ciple of c	nf and terminal voperation, back	voltage. Simple nu emf and its sign	induced emf expression, type merical. ifficance. Torque equation, ty	C	8hrs	
transformers, EM Three-phase induc	F equation, ction of rotating	, losses, variation g magnetic field,	h of losses with re Principle of oper	ation, Types and construction spect to load. Efficiency and sin ation, constructional features of numerical.	mple numerical.	8hrs	
<b>Electricity Bill</b> : F Definition of "un electricity bill for <b>Equipment Safet</b> demerits.	Power ratin hit" used f domestic c ty measure	g of household or consumption onsumers. es: Working pri	appliances includi of electrical ene nciple of Fuse and	oping. Two way and three way ng air conditioners, PCs, laptop rgy, two-part electricity tariff I Miniature circuit breaker (Mo bes, Safety Precautions to avoid	ps, printers, etc. , calculation of CB), merits and	8hrs	
Reference books	:					·	
9. Rajendra 10. B L Ther 11. B L Ther 12. D.P. Kot 13. V. N. Mi 14. R.V. Srir	Prasad "Fu raja& A K " raja& A K " hari and Na ttal and Ar nivasa Mur	undamentals of l Theraja" Electric Theraja" ABC o agrath "Theory a vind Mittal;, " B thy "Basic Elect	Electrical Enginee cal Technology", V f Electrical Engine and Problems in el- asic Electrical Engineering	ublications, 2nd edition, 2011. ring", PHI 3rd edition, 2014. Vol 1, 2nd edition. eering", 2nd edition. ectrical Engineering", PHI editi gineering" McGraw Hill. Sanguine Technical Publisher2			
Course outcomes	: On comp	pletion of the co	urse, the student	will have the ability to:			
Course Code	CO's			Course Outcome (CO)			
	CO1	Understand the	e concepts of vario	ous energy sources and Electric	circuits.		
	CO2	Apply the basi	c Electrical laws t	o solve circuits.			
22ESC142/ 242	CO3			ration of various Electrical Mac			
	CO4	Identify suitab	le Electrical mach	ine for practical implementation	1.		
	CO5			power transmission and distriction of the power transmission and distriction and the power states and the power states and the power states are pow	bution, electrici	ty billing,	

(	Subject code	Professional Writing Skills in Englis 22PWS16/26	Credit: (	)
	Hours/Week:	1 hour. (Theory)	SEE: 50 Marks	
	otal hours: 15	CIE: 50 Marks	SEE: 30 Marks	
10	Star nours. 15	MODULES	SEE. 1 .5HOU	TeachingHour
		Module-I		Teachingfiour
parts of spectrum (Concord R	ech, Use of verbs and phra	Writing and Speaking English: Common asal verbs, Auxiliary verbs and their forms, S Subject-verb agreement, Sequence of Tenses	Subject Verb Agreement	3 hours
in renses. v	vorus comused/wilsused.	Module-II		
Introduction writing, Ser	andConclusion, Importa	<b>ting: Organizing</b> Principles of Paragraphs nce of Proper Punctuation, Precise writing Corrections activities. Misplaced modifiers, O	and Techniques in Essay	3 hours
		Module-III		
writing, Sig Technical P	nificance of Reports, Typ roposals, Characteristics o	actices: Technical writing process, Introductes of Reports. Introduction to Technical Proposals. Scientific Writing Proceedings of Sentence Improvement, Cloze Test and Th	oposals Writing, Types of cocess. Grammar – Voices	3 hours
p	······································	Module -IV		
Barriers, In Applications effective res	mproving Listening Ski s, Types of official/emplo sume for employment, Em	<b>nployment:</b> Listening Comprehension, Type Ils. Reading Comprehension, Tips for oyment/business Letters, Resume vs. Bio Da ails, Blog Writing and Memos.	effective reading. Job ata, Profile, CV. Writing	3 hours
Characterist workplace,	ics and Strategies of a Non-Verbal Communicat	<b>Workplace</b> : Group Discussion and GD and PI's, Intra and Interpersonal G ion Skills and its importance in GD and Inte Strategies of Presentation Skills.	Communication Skills at	3 hours
Text bool	K:			
12) "1		<b>lls in English"</b> published by Fillip Learning - per AICTE 2018 Model Curriculum) (ISBN- dition 2019].		
Reference				
27) T Ir	echnical Communication		N-978-93-5350-050-4), Cen	
		<b>u</b> – Principles and Practice, Third Edition by I	Meenakshi Raman and Sang	eetha Sharma,
	Oxford University Press 20			
	8	<b>nmar &amp; Composition</b> by Wren and Martin,	1.	
· · ·	meetive Technical Comm	nunication – Second Edition by M Ashraf Ri	zvi, McGraw Hill Education	n (India) Private
<b>30)</b> E				
30) E Course ou	tcome (Course Skill Set)			
30) E Course ou At the end	l of the course the student		•	]
30) E Course ou At the end CO1	l of the course the student To understand and ident	ify the Common Errors in Writing and Speak	ing.	
30) E Course ou At the end CO1 CO2	I of the course the studentTo understand and identTo Achieve better Techr	ify the Common Errors in Writing and Speak nical writing and Presentation skills.		
30) E Course ou At the end CO1 CO2 CO3	I of the course the studentTo understand and identTo Achieve better TechrTo read Technical propo	ify the Common Errors in Writing and Speak nical writing and Presentation skills. Isals properly and make them to Write good t		
30) E Course ou At the end CO1 CO2	I of the course the studentTo understand and identTo Achieve better TechrTo read Technical propoAcquire Employment an	ify the Common Errors in Writing and Speak nical writing and Presentation skills.	echnical reports.	

	Indian Constitution		
Subject code	22ICO17/27	Credit: 0	1
Hours/Week:	1 hour. (Theory)	SEE: 50 Marks	3
Total hours: 15	CIE: 50 Marks	SEE: 1 hours	
· · · · · · · · · · · · · · · · · · ·	MODULES	-	TeachingHours
	Module-I		
Indian Constitution: Necessity of the	Constitution, Societies before and after t	he Constitution adoption.	
Introduction to theIndian constitution, M	Aaking of the Constitution, Role of the Con	stituent Assembly.	3 hours
	Module-II		
	on. Preamble of Indian Constitution &		
	and its Restriction and limitations in diffe	erent Complex Situations.	3 hours
building.			
	Module-III		
	licy (DPSP's) and its present relevant		
	nd significance in Nation, Union Executiv	ve: Parliamentary System,	3 hours
Union Executive – President, Prime			
	Module -IV	л т. <sup>1.</sup> .1	
	ary Committees, Important Parliamentary		2 h
System of mula, supreme Court of mul	a and other Courts, Judicial Reviews and J Module-V	udicial Activisiii.	3 hours
State Executive and Covernor CM	State Cabinet, Legislature - VS & VI	P Election Commission	
	nent to Constitution, and Important Const		3 hours
today. Emergency Provisions.	inclut to constitution, and important const	itutional 7 menunents tin	5 110013
Text book:			
	Competitive Exams) - Published by	Naidhruva Edutech Lea	rning Solutions,
Bengaluru. – 2022.			C A
10. "Introduction to the Constitut	ion of India", (Students Edition.) by Du	ırga Das Basu (DD Basu	): Prentice –Hall,
2008.			
Reference books:			
	fessional Ethics and Human Rights" by S	Shubham Singles, Charles E	. Haries, andet
1 00	rning India, Latest Edition – 2019.		
	" by Merunandan K B: published by Meru	gu Publication, Second Ed	ition,
Bengaluru.			
	udents & Youths by Justice HN Nagamo		ekon.
	, V.S.Senthilkumar, "Engineering Ethics"	, Prentice –Hall, 2004.	
Course outcome (Course Skill Set)			
At the end of the course the student w			
CO1 Analyse the basic structur			
	ntal Rights, DPSP's and Fundamental Duti		1.
	vernment, political structure & codes, proc	edures.	
	cutive & Elections system of India.		
CO5 Remember the Amendme	nts and Emergency Provisions, other impor	tant provisions given by the	constitution.

Subject code 0100000000000000000000000000000000000	
Subject code 22SFH18/28 Credit: 01	
Hours/Week: 1 hour. (Theory) SEE: 50 Marks	
Total hours: 15 CIE: 50 Marks SEE: 1 hours	
MODULES Teachi	ngHours
Module-I	
Good Health & It's balance for positive mindset: Health -Importance of Health, Influencing factors	
	hours
family, Health & Personality, Psychological disorders-Methods to improve good psychological health,	
Changing health habits for good health.	
<b>Building of healthy lifestyles for better future:</b> Developing healthy diet for good health, Food & health,	L
Nutritional guidelines for good health, Obesity & overweight disorders and its management, Eating disorders, Fitness components forhealth, Wellness and physical function, How to avoid exercise injuries.	hours
Module-III	
Creation of Healthy and caring relationships : Building communication skills, Friends and friendship -	
	hours
life, understanding of basic instincts of life (more than a biology), Changing health behaviours through	liouis
social engineering.	
Module -IV	
Avoiding risks and harmful habits: Characteristics of health compromising behaviors, Recognizing and	
avoiding of addictions, How addiction develops, Types of addictions, influencing factors of addictions, 31	hours
Differences between addictivepeople and non addictive people & their behaviors. Effects of addictions Such	
as, how to recovery from addictions.	
Module-V	
Preventing & fighting against diseases for good health: How to protect from different types of	
	hours
Management of chronic illness for Quality of life, Health & Wellness of youth :a challenge for upcoming	
future, Measuring of health & wealth status. Text book:	
	PT I
16. "Scientific Foundations of Health" – Study Material Prepared by Dr. L Thimmesha, Published in VI University Website.	10-
·	
17. "Scientific Foundations of Health", (ISBN-978-81-955465-6-5) published by Infinite Learning Solutions,	
Bangalore – 2022.	• • • •
<ol> <li>Health Psychology - A Textbook, FOURTH EDITION by Jane Ogden McGraw Hill Education (India) Pr Limited - Open University Press.</li> </ol>	ivate
Reference books:	
<b>21. Health Psychology</b> (Second edition) by Charles Abraham, Mark Conner, Fiona Jones and Daryl O'Co	nnor –
Published by Routledge 711 Third Avenue, New York, NY 10017.	iiioi
22. HEALTH PSYCHOLOGY (Ninth Edition) by SHELLEY E. TAYLOR - University of California, Lo	os
Angeles, McGraw Hill Education (India) Private Limited - Open University Press.	
23. SWAYAM / NPTL/ MOOCS/ We blinks/ Internet sources/ YouTube videos and other materials / notes.	
24. Scientific Foundations of Health (Health & Welness) - General Books published for university and co	lleges
references by popular authors and published by the reputed publisher.	
Course outcome (Course Skill Set)	
At the end of the course the student will be able to:	
CO1 To understand and analyse about Health and wellness (and its Beliefs) & It's balance for positive mindse	et.
	et.

 CO4
 To learn about Avoiding risks and harmful habits in their campus and outside the campus for their bright future.

 CO5
 Prevent and fight against harmful diseases for good health through positive mindset.

	Outc	ome-Based Educati	P.D.A College of Egineering Kalbura Scheme of Teaching and E on(OBE)and Choice Based Credit Syste	xaminations-2022		,	e aca	ndem	ic vea	r 2022	-23)		
I Sem			Stream) Mech, /EE	(CD CD) (Direcu )		<u></u>	<u>e                                    </u>		lie yeu		,	s Group	)
	Teac		Teaching							)n			
SI. No	Course and	CourseCode	CourseTitle	TD/PSB	Theory	Tutorial	Practical/	SDA	Duration in hours	CIEMarks	SEEMarks	Total Marks	Credits
	1.00.00			-	L	Т	Р	S		-			
1	ASC(IC)	22MATM11	Mathematics for ME streamI	Maths	2	2	2	0	03	50	50	100	04
2	ASC(IC)	22PHYM12	Physics for ME Stream	PHY	2	2	2	0	03	50	50	100	04
3	ESC	22EME23	Elements of mechanical engineering	Respective Engg dept	2	2	0	0	03	50	50	100	03
4	ESC-I	22ESC145	Introduction to C Programming	ive Engg dept	3	0	0	0	03	50	50	100	03
5.	PLC-I	22ETC15X	Emerging Technology Courses		2	0	2	0	03	50	50	100	03
6	AEC	22ENG16	Communicative English	Humanities	1	0	0	0	1.5	50	50	100	01
7		22KSK27/ 22KBK27	Samskrutika Kannada/ Balake Kannada	Humanities	1	0	0	0	1.5	50	50	100	01
8	AEC/SDC	22IDT28	Innovation and Design Thinking	Any Dept	1	0	0	0	01	50	50	100	01
	•	•	•	TOTAL						400	400	800	20

	C	outcome-Based E	P.D.A College of Engin Scheme of T Education (OBE)and Choice Bas	eaching and Examina	tior	ns-2	2022				emic year	2022-23)		
II Sei	mester (Mec	hanical Engined	ering Stream) Mech. /EE	-				(C)	nemi	stry Gi	roup)			
Sl. Course and Course No Code								· ·	achi			nination		Credits
				TD/PSB	Theo	ry	Tutoria	Practic al/		Duration in hours	CIEMa rks	SEE Marks	Total Marks	
1	ASC(IC)	22MATM21	Mathematics for ME Stream-	_	2	L	<b>T</b> 2	<b>P</b> 2	<b>S</b>	03	50	50	100	04
2	ASC(IC)	22CHEM22	I Chemistry for Civil Engg Stream	Chemistry	2		2	2	0	03	50	50	100	04
3	ESC	22CED23	Computer-Aided Engineering Drawing	Civil/Mech Engg dept	2		0	2	0	03	50	50	100	03
4	ESC-I	22ESC241	Introduction to Civil	Respective EnggDept	3		0	0	0	03	50	50	100	03
5	ETC-I	22PLC25X	Programming Language courses I & II		3		0	0	0	03	50	50	100	03
6	AEC	22PWS26		Humanities	1		0	0	0	1.5	50	50	100	01
7	HSMS	22ICO17/27	0	Humanities	1		0	0	0	01	50	50	100	01
8	HSMS	22SFH28	Scientific Foundations of Health	AnyDept	1		0	0	0	01	50	50	100	01
	•	•		TOTAL							400	400	800	20

	Course Title: Mathem	atics-I for Mechanical Eng	vineering stream	
		Based Credit System (CBC)		
	(From	the academic year 2022-23	)	
	Course Code	<b>22MATM11</b>	<b>CIE Marks</b>	50
	Credits	04	SEE Marks	50
	Course Type	Integrated		
	Contact Hours/Week (L-T-P)	2-2-2	<b>Total Marks</b>	100
	Contact Hours of Pedagogy	42 hours Theory +10 Lab slots	Exam Hours	03
	Module-1 C	'alculus	(5L+3T)	
Polar c	<b>tion to polar coordinates and curvat</b> poordinates, Polar curves, angle betwee ations. Curvature and Radius of curvat	ure relating to Mechanical en the radius vector and the	engineering. tangent, and angle betwe	
Application	y: Center and circle of curvature, evolutions: Applied Mechanics, Structural devels: L1, L2 and L3)		materials, Elasticity.	
	· · · · · · · · · · · · · · · · · · ·	xpansion and Multivariabl	e Calculus (6L+3	T)
Introduct	tion to series expansion and partial d			,
applicatio			0	C
Taylor	r's and Maclaurin's series expansion for	or one variable (Statement o	nly) – problems.	
ndetermin	nate forms : L-Hospital's rule, problem	ns.		
Partial c	differentiation, total derivative - differ	entiation of composite funct	ions. Jacobian and	
problems.	Maxima and minima for a function of	two variables – Simple Pro	blems.	
Self-study	y: Euler's theorem and problems. Meth	hod of Lagrange's undeterm	ined multipliers with sin	gle constraint.
	ons: Computation of stress and strain,			
	alues(RBT Levels: L1, L2 and L3)		0 1	
	Aodule-3 Ordinary Differential Equ	ations (ODEs) of first orde	er (6L+2T)	
	ion to first-order ordinary different			
	cal engineering.			
	and Bernoulli's differential equations.	Exact and reducible to exac	t differential equations -	Integrating
			1	0 0
actors on	$\frac{1}{N} \left( \frac{\partial M}{\partial y} - \frac{\partial N}{\partial x} \right) \text{ and } \frac{1}{M} \left( \frac{\partial N}{\partial x} - \frac{\partial N}{\partial x} \right)$	$\frac{\lambda \mathbf{v}}{2}$		
	$1 \setminus 0 \setminus 0 \setminus 1 \setminus 1 \setminus 0 \setminus 0$	CV		
Orthogona	al trajectories and Newton's law of co	oling.	itions. Solvable for p.on	v Clairaut's
Orthogona Nonlinear	al trajectories and Newton's law of coor <b>differential equations:</b> Introduction	oling. to general and singular solu	tions, Solvable for p onl	y, Clairaut's
Orthogona Nonlinear equations,	al trajectories and Newton's law of coor r differential equations: Introduction reducible to Clairaut's equations - Pro-	oling. to general and singular solu oblems.		
Orthogona Nonlinear equations, Self-Study	al trajectories and Newton's law of coor r differential equations: Introduction , reducible to Clairaut's equations - Pro y: Applications of ODEs in Mechanic	oling. to general and singular solu oblems. al Engineering problems lik		
Orthogona Nonlinear equations, Self-Study inear ODI	al trajectories and Newton's law of coor r differential equations: Introduction , reducible to Clairaut's equations - Pro y: Applications of ODEs in Mechanic. E by the method of solvable for x and	oling. to general and singular solu oblems. al Engineering problems lik y.	e vibration problems, so	
Orthogona Nonlinear equations, Self-Study inear ODI	al trajectories and Newton's law of coor r differential equations: Introduction , reducible to Clairaut's equations - Pro y: Applications of ODEs in Mechanic E by the method of solvable for x and ons: Rate of Growth or Decay, Condu	bling. to general and singular solut oblems. al Engineering problems lik y. ction of heat.( <b>RBT Levels:</b>	e vibration problems, sc L1, L2 and L3)	
Orthogona Nonlinear equations, Self-Study inear ODI Applicatio	al trajectories and Newton's law of coor r differential equations: Introduction reducible to Clairaut's equations - Pro- y: Applications of ODEs in Mechanic. E by the method of solvable for x and ons: Rate of Growth or Decay, Condu Module-4 Integra	bling. to general and singular solut oblems. al Engineering problems lik y. ction of heat.( <b>RBT Levels:</b> <b>I Calculus</b>	e vibration problems, so L1, L2 and L3) (6L+3T)	
Orthogona Nonlinear equations, Self-Study inear ODI Applicatio	al trajectories and Newton's law of coor r differential equations: Introduction , reducible to Clairaut's equations - Pro- y: Applications of ODEs in Mechanic E by the method of solvable for x and ons: Rate of Growth or Decay, Condu Module-4 Integrat tion to Integral Calculus in Mechanic	oling. to general and singular solu oblems. al Engineering problems lik y. ction of heat.( <b>RBT Levels:</b> <b>l Calculus</b> cal Engineering applicatio	e vibration problems, so <u>L1, L2 and L3)</u> (6L+3T) ns.	
Orthogona Nonlinear equations, Self-Study inear ODI Applicatio Introduct Multiple I	al trajectories and Newton's law of coor r differential equations: Introduction , reducible to Clairaut's equations - Pro- y: Applications of ODEs in Mechanic. E by the method of solvable for x and ons: Rate of Growth or Decay, Condu Module-4 Integral tion to Integral Calculus in Mechani Integrals: Evaluation of double and tr	oling. to general and singular solu oblems. al Engineering problems lik y. ction of heat.( <b>RBT Levels:</b> <b>I Calculus</b> <b>cal Engineering applicatio</b> iple integrals, evaluation of	e vibration problems, so <u>L1, L2 and L3)</u> (6L+3T) ns. double integrals by	
Orthogona Nonlinear equations, Self-Study linear ODI Application Introduct Multiple I change of	al trajectories and Newton's law of coor r differential equations: Introduction , reducible to Clairaut's equations - Pro- y: Applications of ODEs in Mechanic E by the method of solvable for x and ons: Rate of Growth or Decay, Condu Module-4 Integration to Integral Calculus in Mechani Integrals: Evaluation of double and tr order of integration, changing into po	oling. to general and singular solu oblems. al Engineering problems lik y. ction of heat.( <b>RBT Levels:</b> <b>I Calculus</b> <b>cal Engineering applicatio</b> iple integrals, evaluation of	e vibration problems, so <u>L1, L2 and L3)</u> (6L+3T) ns. double integrals by	
Orthogona Nonlinear equations, Self-Study inear ODI Application (Introduct Multiple I change of Volume by	al trajectories and Newton's law of coor r differential equations: Introduction , reducible to Clairaut's equations - Pre- y: Applications of ODEs in Mechanic. E by the method of solvable for x and ons: Rate of Growth or Decay, Condu Module-4 Integral tion to Integral Calculus in Mechani Integrals: Evaluation of double and tr order of integration, changing into po y double integral. Problems.	oling. to general and singular solu oblems. al Engineering problems lik y. ction of heat.( <b>RBT Levels:</b> <b>I Calculus</b> <b>cal Engineering applicatio</b> iple integrals, evaluation of lar coordinates. Application	e vibration problems, so L1, L2 and L3) (6L+3T) ns. double integrals by s to find Area and	olution of non-
Orthogona Nonlinear equations, Self-Study linear ODI Applicatio Applicatio Introduct Multiple I change of Volume by Beta and	al trajectories and Newton's law of coor r differential equations: Introduction , reducible to Clairaut's equations - Pre- y: Applications of ODEs in Mechanic. E by the method of solvable for x and ons: Rate of Growth or Decay, Condu Module-4 Integra tion to Integral Calculus in Mechani Integrals: Evaluation of double and tr order of integration, changing into po y double integral. Problems. Gamma functions: Definitions, prop-	oling. to general and singular solu oblems. al Engineering problems lik y. ction of heat.( <b>RBT Levels:</b> <b>I Calculus</b> <b>cal Engineering applicatio</b> iple integrals, evaluation of lar coordinates. Application erties, relation between Beta	e vibration problems, so L1, L2 and L3) (6L+3T) ns. double integrals by s to find Area and	olution of non-
Orthogona Nonlinear equations, Self-Study linear ODI Application Introduct Multiple I change of Volume by Beta and Self-Study	al trajectories and Newton's law of coor r differential equations: Introduction , reducible to Clairaut's equations - Pre- y: Applications of ODEs in Mechanic. E by the method of solvable for x and ons: Rate of Growth or Decay, Condu Module-4 Integral tion to Integral Calculus in Mechani Integrals: Evaluation of double and tr order of integration, changing into po y double integral. Problems.	bling. to general and singular solut oblems. al Engineering problems lik y. ction of heat.( <b>RBT Levels:</b> <b>I Calculus</b> <b>cal Engineering application</b> iple integrals, evaluation of lar coordinates. Application erties, relation between Beta or of gravity.	e vibration problems, so <u>L1, L2 and L3)</u> (6L+3T) ns. double integrals by s to find Area and a and Gamma functions.	Problems.

	Module-5 Linear Algebra	(5L+3T)
Introd	luction of linear algebra related to Mechanical Engineering ap	plications.
	mentary row transformation of a matrix, Rank of a matrix. Consist	
	ons - Gauss-elimination method, Gauss-Jordan method and approx	
	values and Eigenvectors, Rayleigh's power method to find the dor	
	tudy: Solution of a system of linear equations by Gauss-Jacobi ite	rative method. Inverse of a square matrix by
	- Hamilton theorem.	
Applio	cations: Structural Analysis, Balancing equations.(RBT Levels: L	<b>1</b> , L2 and L3)
List of	f Laboratory experiments (2 hours/week per batch/ batch strer	ngth 15)
10 lab	sessions + 1 repetition class + 1 Lab Assessment	
1	2D plots for Cartesian and polar curves	
2	Finding angle between polar curves, curvature and radius of curv	vature of a given curve
3	Finding partial derivatives, Jacobian and plotting the graph	~
4	Applications to Maxima and Minima of two variables	
5	Solution of first-order differential equation and plotting the grap	hs
6	Program to compute surface area, volume and centre of gravity	
7	Evaluation of improper integrals	
8	Numerical solution of system of linear equations, test for consist	ency and graphical
	representation	
9	Solution of system of linear equations using Gauss-Seidel iterati	on
10	Compute eigen values and eigenvectors and find the largest and	
	Rayleigh power method	
.Sugge	ested software's: Mathematica/MatLab/Python/Scilab	
	e outcome (Course Skill Set)	
	end of the course the student will be able to:	
CO 1	Apply the knowledge of calculus to solve problems related to	polar curves
CO 2		
	functions	6
CO 3	Analyze the solution of linear and nonlinear ordinary differen	ntial equations
CO 4		
CO 5		
	eigen values and eigen vectors. Familiarize with modern mat	
	MATHEMATICA/ MATLAB/ PYTHON/SCILAB	
Sugge	sted Learning Resources:	
	(Title of the Book/Name of the author/Name of the publisher/	Edition and Year)
Text <b>E</b>		······
1. <b>I</b>	3. S. Grewal: "Higher Engineering Mathematics", Khanna publish	ners, 44th Ed., 2021.
	E. Kreyszig: "Advanced Engineering Mathematics", John Wiley &	
	ence Books	
1. 🗸	V. Ramana: "Higher Engineering Mathematics" McGraw-Hill Ed	ucation, 11th Ed., 2017
	Srimanta Pal & Subodh C. Bhunia: "Engineering Mathematics"	
2016.		•
3. I	N.P Bali and Manish Goyal: "A textbook of Engineering Mathem	atics" Laxmi
F	Publications, 10th Ed., 2022.	
4. (	C. Ray Wylie, Louis C. Barrett: "Advanced Engineering Mathem	natics" McGraw – Hill Book Co.,
	ork, 6th Ed., 2017.	
5. (	Gupta C.B, Sing S.R and Mukesh Kumar: "Engineering Mather	natic for Semester I and II", Mc-Graw
	ducation(India) Pvt. Ltd 2015.	
	H. K. Dass and Er. Rajnish Verma: "Higher Engineering Mather	natics" S. Chand
	Publication, 3rd Ed., 2014.	
7. J	ames Stewart: "Calculus" Cengage Publications, 7th Ed., 2019.	
	David C Lay: "Linear Algebra and its Applications", Pearson Pub	
	Gareth Williams: "Linear Algebra with applications", Jones Bartl	ett Publishers Inc.,
6	<sup>5th</sup> Ed., 2017.	

Course Title:	Physics for ME Stream		
Course Code:	22PHYM12/22	CIE Marks	50
Course Type	Integrated	SEE Marks	50
(Theory/Practical/Integrated)		Total Marks	100
Teaching Hours/Week (L:T:P: S)	2:2:2:0	Exam Hours	03
Total Hours of Pedagogy	40 hours Theory + 10-12 Lab	Credits	04
	slots		
Module-	1 (8 Hours)		

## Module -I: Oscillations and Shock waves:

**Oscillations:** Simple Harmonic motion (SHM), Differential equation for SHM (No derivation), Sprigs: Stiffness Factor and its Physical Significance, Series and Parallel combination of springs (Derivation), Types of Springs and their applications. Theory of Damped oscillations (Qualitative), Types of Damping (Graphical Approach). Engineering applications of Damped oscillations, Theory of Forced oscillations (Qualitative), Resonance, Sharpness of resonance. Numerical Problems.

**Shock waves:** Mach number and Mach Angle, Mach Regimes, Definition and Characteristics of Shock waves, Construction and working of Reddy Shock tube, Applications of Shock Waves, Numerical problems.

### **Pre-requisites: Basics of Oscillations**

## Self-learning: Simple Harmonic motion, Differential equation for SHM

Module-2 (8 Hours)

### Elasticity

Stress-Strain Curve, Stress hardening and softening. Elastic Moduli, Poisson's ratio, Relation between Y, n and  $\sigma$  (with derivation), mention relation between K, Y and  $\sigma$ , limiting values of Poisson's ratio. Beams, Bending moment and derivation of expression, Cantilever and I section girder and their Engineering Applications, Elastic materials (qualitative). Failures of engineering materials - Ductile fracture, Brittle fracture, Stress concentration, Fatigue and factors affecting fatigue (only qualitative explanation), Numerical problems.

## Pre requisites: Elasticity, Stress

## & StrainSelf-learning: Stress-

## Strain Curve

## Module-3 (8 Hours)

## Thermoelectric materials and devices:

Thermo emf and thermo current, Seeback effect, Peltier effect, Seeback and Peltier coefficients, figure of merit (Mention Expression), laws of thermoelectricity. Expression for thermo emf in terms of T1 and T2, Thermo couples, thermopile, Construction and Working of Thermoelectric generators (TEG) and Thermoelectric coolers (TEC), low, mid and high temperature thermoelectric materials, Applications: Exhaust of Automobiles, Refrigerator, Space Program (RTG), Numerical Problems

## Pre requisites: Basics of Electrical

## conductivitySelf-learning: Thermo

emf and thermo current

Module-4 (8 Hours)

## Photonics:

## LASER

Properties of a LASER Beam, Interaction of Radiation with Matter, LASER action, Population Inversion, Metastable State, Requisites of a LASER System, ND YAG LASER, LASER Range Finder, LIDAR, Cutting, Drilling, Welding and Surface hardening.

## **Optical Fiber**

Principle and Construction of Optical Fibers, Acceptance angle and Numerical Aperture (NA), Expression for NA, Modes of Propagation, Attenuation and Fiber Losses, Fiber Optic Displacement Sensor, Fiber Optic Temperature Sensor, Numerical Problems

## Pre requisite: Properties of light.

## Self-learning: Total Internal Reflection.

## Module-5 (8 Hours)

Material Characterization and Instrumentation Techniques:

Introduction to nano materials: Nanomaterial and nanocomposites. Principle, construction and working of X-ray Diffractometer, Crystallite size determination by Scherrer equation, Atomic Force Microscopy (AFM): Principle, construction, working and applications, X-ray photoelectron spectroscopy(XPS), Scanning electron microscopy (SEM), Transmission electron microscopy (TEM), Numerical Problems.

## Pre requisites: Quantum MechanicsSelf-learning: Crystallites

## Course outcome (Course Skill Set)

At the end of the course the student will be able to:

CO1 **Elucidate** the concepts in oscillations, waves, elasticity and material failures

CO2 **Summarize** the fundamentals of Thermoelectric materials and their application

CO3 **Discuss** The principles photonic devices and their application relevant to mechanical engineering

CO4 **Explain** the various material characterization techniques

CO5 **Practice** working in groups to conduct experiments in physics and **perform** precise and honest measurements.

## Laboratory Component:

Any Ten Experiments have to be completed from the list

of experimentsNote: The experiments have to be

classified into

- e) Exercise
- f) Demonstration

g) Structured Inquiry

h) Open Ended

Based on the convenience classify the following experiments into above categories. Select at least onesimulation /spreadsheet activity.

## List of Experiments

- 1. Determination of Young's modulus of the material of the given bar Uniform Bending.
- 2. Determination of Rigidity modulus of the Material of the wire using Torsional Pendulum.
- 3. Study of Forced Mechanical Oscillations and Resonance.
- 4. Study of the frequency response of Series & Parallel LCR circuits.
- 5. Determination of Fermi Energy of the given Conductor.
- 6. Determination of Resistivity by Four Probe Method.
- 7. Determination of effective spring constant of the given springs in series and parallel combinations.

- 8. Determination of Young's modulus of the material of the given bar Single Cantilever.
- 9. Determination of the Moment of Inertia of the given irregular body using torsional pendulum.
- 10. Determination of Wavelength of Laser using Diffraction Grating.
- 11. Determination of Acceptance angle and Numerical Aperture of the given Optical Fiber.
- 12. Determination of the Radius of Curvature of the given Plano Convex Lens by setting Newton's Rings.
- 13. Step Interactive Physical Simulations.
- 14. Study of motion using spread Sheets
- 15. Application of Statistics using Spread Sheets.
- 16. PHET Interactive Simulations
- 17. Flywheel
- 18. Interference of Air wedge

:(https://phet.colorado.edu/en/simulations/filter?subjects=physics&type=html,prototype)

## Suggested Learning Resources:

## Books (Title of the Book/Name of the author/Name of the publisher/Edition and Year)

13. Vibrations and Waves (MIT introductory Physics Series), A P French, CBS, 2003 Edition

- 14. Timoshenko, S. and Goodier J.N. "Theory of Elasticity", 2nd Edition, McGraw Hill Book Co, 2001.
- 15. Sadhu Singh, "Theory of Elasticity", Khanna Publishers, 1997
- 16. Mechanical Properties of Engineered Materials by Wole Soboyejo, CRC Press; 1st edition, 2002
- 17. Heat & Thermodynamics and Statistical Physics( XVIII-Edition) Singhal, Agarwal & Satyaprakash PragatiPrakashan, Meerut, 2006. 4
- 18. Heat and Thermodynamics (I-Edition) D.S. Mathur S. Chand & Company Ltd., New-Delhi, 1991
- 19. Heat and Thermodynamics, Brijlal & Subramanyam, S. Chand & Company Ltd., New-Delhi.
- 20. Physics of Cryogenics by Bahman Zohuri, Elsevier, 2018
- 21. Materials Characterization Techniques-Sam Zhang, Lin Li, Ashok Kumar, CRC Press, First Edition, 2008.
- 22. Characterization of Materials- Mitra P.K. Prentice Hall India Learning Private Limited.
- 23. Nanoscience and Nanotechnology: Fundamentals to Frontiers M.S. Ramachandra Rao & Shubra Singh, WileyIndia Pvt Ltd.
- 24. Nano Composite Materials-Synthesis, Properties and Applications, J.
  - Parameswaranpillai, N. Hameed, T.Kurian, Y. Yu, CRC Press.

Shock waves made simple by Chintoo S Kumar, K Takayama and K P J Reddy: Willey India Pvt. Ltd,Delhi,2014

	LEMENTS OF MECHANICA		
Course Code:	22EME13/23	CIE Marks	50
Course Type		SEE Marks	50
(Theory/Practical/Integrated)	Theory	Total Marks	100
Teaching Hours/Week (L:T:P: S)	2:2:0:0	Exam Hours	03
Total Hours of Pedagogy	40 hours	Credits	03
	Module-1 (8 hours)	1	
Introduction to Mechanical Engineering (	Overview only):		, . <b>.</b>
Role of Mechanical Engineering in Industrie		is and Technologies indiffe	erent sectors such as
Energy, Manufacturing, Automotive, Aerosp Steam Formation and Application:			
Modes of heat transfer, Steam formation		operties and applications	s of steam (simple
numerical problems). Energy Sources and P Basic working principles of Hydel power		uclear nower plant Solar	nower plant Tidal
power plant and Wind power plant.	plant, Thermai power plant, h	luciear power plain, solar	power plant, ridar
	Module-2 (8 hours)		
Machine Tool Operations:			
Lathe: Principle of working of a center lathe	e, lathe operations: Turning, fac	ing, knurling, threadcutting	g, taper
turning by swivelling the compound rest,	-		
Drilling Machine: Working of simple drilling			
sinking, counter boring, Milling Machine: W			
milling and slot milling. (No sketches of mac			
Introduction to Advanced Manufacturing	Systems: Introduction, compo	nents of CNC, advantages	and applications of
CNC, 3D printing.			
	Module-3 (8 hours)		
<b>Introduction to IC Engines</b> : Components IC Engines, performance of IC engines (S Principle of refrigeration, Refrigerants and working principle of room air conditioner &	imple numerical). <b>Introduction</b> their desirable properties. Wo Applications of air Condition	on to Refrigeration and rking principle of VCR re	Air Conditioning:
IC Engines, performance of IC engines (S Principle of refrigeration, Refrigerants and working principle of room air conditioner &	imple numerical). <b>Introduction</b> their desirable properties. Wo	on to Refrigeration and rking principle of VCR re	Air Conditioning:
IC Engines, performance of IC engines (S Principle of refrigeration, Refrigerants and working principle of room air conditioner & Mechanical Power Transmission:	imple numerical). <b>Introduction</b> their desirable properties. Wo Applications of air Conditione <b>Module-4 (8 hours)</b>	on to Refrigeration and a rking principle of VCR re	Air Conditioning: frigeration system,
IC Engines, performance of IC engines (S Principle of refrigeration, Refrigerants and working principle of room air conditioner & <b>Mechanical Power Transmission:</b> <b>Gear Drives</b> : Types - spur, helical, bevel,	imple numerical). <b>Introduction</b> their desirable properties. Wo Applications of air Conditione <b>Module-4 (8 hours)</b>	on to Refrigeration and a rking principle of VCR re	Air Conditioning: frigeration system,
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Course Title: Introduction to C P	rogramming		
Course Code:	22ESC145/245	CIE Marks	50
Course Type (Theory/Practical	Integrated	SEE Marks	50
/Integrated )		Total Marks	100
Teaching Hours/Week (L:T:P: S)	2:0:2	Exam Hours	03
Total Hours of Pedagogy	40 hours	Credits	03
	MODULES		TeachingHours
	Module-I		
Algorithms, Flowcharts, Introduction	to C: Algorithms, Flowcharts, Ba	asic Structure of C Program,	
Executing a "C" program, Constants, Varia			8 hours
<b>Operators and Expressions, Managing I</b>			
operators, assignment operators, incremen			
special operators. Evaluation of express			
expression, operator precedence and associ		ut. Examples & exercises.	
	ule-II		
Decision making and branching: Decision			
nested if statements, the else if ladder,	, Switch statement, The ? : ope	rator, Unconditional control	8 hours
Statements.		<b>-</b>	
<b>Decision Making and Looping:</b> While	statement, Do-While statement, I	For statement, jumps in loop.	
Examples & exercises.	l- III		
	ule-III anotion Initialization Two dime	ncional Amous declaration	
<b>Arrays:</b> One dimensional Array, decla Initialization, examples and exercises.	aration, initialization, I wo dime	ensional Arrays declaration,	8 hours
Strings: Declaring and Initializing String	Variables Deading Strings from	Terminal Writing strings to	8 nours
Screen, Arithmetic Operations on Character			
Module -IV	ers, string-nanoling functions, exam	ipies and exercises.	
<b>Functions and Recursion :</b> Need for U	Iser-defined Functions A multi-fu	unction program Elements of	
User-defined Functions, Definition of fun			8 hours
declaration, Category of functions, Recurs		is, runetion cans, runetion	0 nours
Structures and Unions: Defining a Struct		riables. Accessing Structure	
Members, Structure Initialization, Copying			
members, array of structures Unions: Unio			
, <b>,</b>	Module-V	•	
Pointers: Introduction, Understanding po	inters, Accessing the address of a	variable, Declaring pointer	
variables, Initializing of pointer variables,			8 hours
Examples & exercises.			
File Management: Defining and openin	ng a file, closing file, input, outp	out operations on files, error	
handling during I/O operations. Examples	& exercises.		
Text book:			
24. E. Balagurusamy, "Programming in A	ANSI C", Tata Mcgraw Hill Educat	ion Private Limited-VEdition, 2	2016
Reference books:			
25.Herbert Schildt, "Complete Reference	e in C",Fourth Edition, Tata McGra	w Hill Publication, 2017	
26. Yashwant P. Kanetakar, "Let us C", F	Fifth Edition, BPB Publications, 201	16.	
27.Brian W Kernighan & Dennis M		ming Language", Prentice Hall	Publisher.
Second Edition, 2004.	6	6 6 6 7 7 7 7 7	,
28.Behrouz A.Forouzan and Richard F.G	Gilberg,"Computer Program: A struc	ctured programmingApproach U	Jsing C.",
Third edition, Thomson Learning, 200			C ,
Course outcome (Course Skill Set)			
At the end of the course the student will	be able to:		
	charts and understand the different	data typesand Operators in C la	nguage
	ion /control constructs for solving d		
	gs functions to develop		
COS Apply analys and Stiring			
	ures and apply modular programmin	ng concepts	ļ
CO4 Demonstrate the use of struct	ures and apply modular programmin world problems using pointers and t		

### **Practice Programs:**

- 1.Write a C program using printf statement:
  - a) Print your name and Address.
  - b) Print the pattern:

+ + + + + + + +

2.Write a C Program using Scanf statements

a) Read int, char and float values from the keyboard and display the same.

3.Write a c program to find :

i) Area of rectangle

ii) Area of Square

- iii) Area of circle
- 4. Write a c program using if, if...else, nested if and else...if ladder.
  - i) To find whether number is odd or even.
  - ii) To find whether number is +ve or -ve.
  - iii) To find largest of two numbers.
  - iv) To find largest of three numbers.
- 5. Write a c program using while , do-while and for looping statement. i) Print 1 to 10 numbers using all the three looping statements.
- 6. Write a c program using arrays:
  - i) Read 1 to 10 array elements and display the same.
  - ii) Read float elements and display the same.
- iii) Read character and display the same.

7. Write c program using strings:

i. Read a string from keyboard and display the same.

### **Programming Assignments:**

- 51. C Program to find Mechanical Energy of a particle using  $E = mgh+1/2 mv^2$ .
- 52. C Program to convert Kilometers into Meters and Centimeters.
- 53. C Program To Check the Given Character is Lowercase or Uppercase or Special Character.
- 54. Program to balance the given Chemical Equation values x, y, p, q of a simple chemical equation of the type: The task is to find the values of constants b1, b2, b3 such that the equation is balanced on both sides and it must be the reduced form.
- 55. Implement Matrix multiplication and validate the rules of multiplication.
- 56. Compute sin(x)/cos(x) using Taylor series approximation. Compare you result with the built-in library function. Print both the results with appropriate inferences.
- 57. Sort the given set of N numbers using Bubblesort.
- 58. Write functions to implement string operations such as compare, concatenate, string length. Convince the parameter passing techniques.
- 59. Implement structures to read, write and compute average-marks and the students scoring above and below the average marks for a class of N students.
- 60. Develop a program using pointers to compute the sum, mean and standard deviation of all elements stored in an array of N real numbers

	Communicative English		
Subject code	22ENG16	Credit: 0	1
Hours/Week:	1 hour. (Theory)	SEE: 50 Marks	
Total hours: 15	CIE: 50 Marks	SEE: 1.5 hour	
	MODULES		TeachingHours
			3 hours
consonants andvowels, Sounds I Accent, Stress Shift and	<b>Module-II</b> honetic Transcription, English Pronunciation, P Mispronounced, Silent and Non silent Letters, Sy Vords often Misspelt. Common Errors in Pronunc	llables and Structure. Word	3 hours
<b>Basic English Communicativ</b> Grammar and Parts of Speech, Articles and Pr	Module-III re Grammar and Vocabulary PART - I eposition. Question Tags, One Word Substitutes, ry, All Types of Vocabulary – Exercises on it.	:Grammar: Basic English	3 hours
Suffixes,	Module -IV Grammar and Vocabulary PART - II:Word . Word Pairs (Minimal Pairs) – Exercises, Tense e of Tenses) and Exercises on it.		3 hours
Difference between Extempore, (MTI), Various Techniques for Neutralization of Mother Tongue	<b>Module-V</b> Employment :Information Transfer:Oral Press Public Speaking, Communication Guidelines. e Influence. Reading and Listening Comprehensi roduction, classification, properties and appli	Mother Tongue Influence ons – Exercises.	3 hours
Text book: 13) Communication Skil 14) A Textbook of Englis Learning Solutions, B Reference books:	- u	8-81-955465-2-7), Published	by Infinite
India Pvt Limited [Lat 32. English for Engineer 33. English Language Co [Latest Revised Edition 34. A Course in Technica	<ul> <li>cation by Gajendra Singh Chauhan and Et al, (IS test Revised Edition] - 2019.</li> <li>s by N.P.Sudharshana and C.Savitha, Cambridge ommunication Skills – Lab Manual cum Worl on] – (ISBN-978-93-86668-45-5), 2019.</li> <li>al English – D Praveen Sam, KN Shoba, Cambrage by Michael Swan, Oxford University Press –</li> </ul>	University Press – 2018. <b>kbook,</b> Cengage learning Ind ridge University Press – 2020	ia Pvt Limited
Course outcome (Course SkillAt the end of the course CommCO1Understand and apCO2Identify the nuand		e able to: n their communication skills. siation skills.	
	e all types of English vocabulary and language pr ues of Information Transfer through presentation		

Subject Code	Subject	Stream	Th– Tut-Pr	Credits
22KSK17 / 27	SAMSKRUTHIKA KANNADA	Humanities and Social Sciences (H.S.S)	1 - 0 - 0	01
CIE : 50	SEE : 50 SEE :	: 1 hours 30 Minu	tes	Total : 15 ]
	ಘಟಕ -1 ಕನ್ನಡ ಸಂಸ್ಕೃತಿ ಮತ್ತು			
	ನಂಸ್ಕೃತಿ - ಹಂಪ ನಾಗರಾಜಯ್ಯ			1
	ನ ಏಕೀಕರಣ : ಒಂದು ಅಪೂರ್ವ ಚರಿತ್ರೆ - ಜಿ. ಇಷೆಯಾಗಿ ಕನ್ನಡ - ಡಾ. ಎಲ್. ತಿಮ್ಮೇಶ ಮತ್ತು		ොමෙF	
	ಘಟಕ - 2 ಆಧುನಿಕ ಪೂರ್ವದ ಕ	ಾವ್ಯ ಭಾಗ	(03 hours of p	edagogy)
	: ಬಸವಣ್ಣ, ಅಕ್ಕಮಹಾದೇವಿ, ಅಲ್ಲಮಪ್ರಭು, ಜೇಡರದಾಸಿಮಯ್ಯ, ಆಯ್ದಕ್ಕಿ ಲಕ್ಕಮ್ಮ. ) : ಅದರಿಂದೇನು ಫಲ ಇದರಿಂದೇನು ಫಲ – ಕ		je	
2. 019710114	ತಲ್ಲಣಿಸದಿರು ಕಂಡ್ಯ ತಾಳು ಮನವೇ - ಕನ	-		
3. ತತ್ರಪದಗಳ	ು : ಸಾವಿರ ಕೊಡಗಳ ಸುಟ್ಟು - ಶಿಶುನಾಳ ಶರಿ			
5. CO <sub>d</sub>	ಘಟಕ -3 ಆಧುನಿಕ ಕಾವ್ಯಭಾಗ		(03 hours of pe	dagogy)
1. ಡಿವಿಜಿ ರವರ	ರ ಮಂಕುತಿಮ್ಮನ ಕಗ್ಗದಿಂದ ಅಯ್ಯ ಕೆಲವು ಭಾ		(	8-87
	ಂಚಾಣ : ದಾ.ರಾ. ಬೇಂದ್ರೆ			
<ol> <li>3. ಹೊಸಬಾಳಿ</li> </ol>	ನ ಗೀತೆ : ಕುವೆಂಪು			
	ಘಟಕ - 4 ತಾಂತ್ರಿಕ ವ್ಯಕ್ತಿಗಳ ಪರಿ		(03 hours of p	edagogy)
	ಂ. ವಿಶ್ವೇಶ್ವರಯ್ಯ : ವ್ಯಕ್ತಿ ಮತ್ತು ಐತಿಹ್ಯ – ಎ.		6	
2. ಕರಕುಶಲ ಕ	ಲೆಗಳು ಮತ್ತು ಪರಂಪರೆಯ ವಿಜ್ಞಾನ : ಕರೀಗ	ಗೌಡ ಬೀಚನಹಳ್ಳಿ		
	ಘಟಕ - 5 ಸಾಂಸ್ಕೃತಿಕ, ಜನಪದ	ಕಥೆ ಮತ್ತು ಪ್ರವಾಸ	ಕಥನ (03 hours	of pedagogy)
1. ಯುಗಾದಿ : ಕ				
2. ಮೆಗಾನೆ ಎಂ	ಬ ಗಿರಿಜನ ಪರ್ವತ : ಹಿ.ಚಿ. ಬೋರಲಿಂಗಯ್ಯ	8		
Course outcome (C ಸಾಂಸ್ಕೃತಿಕ ಕನ್ನಡ	ourse Skill Set) ತ (22KSK17/27) ಪಠ್ಯ ಕಲಿಕೆಯ ನಂತರ	ವಿದ್ಯಾರ್ಥಿಗಳಲ್ಲಿ :		
	irse the student will be able to:			
	ಾಷೆ, ಸಾಹಿತ್ಯ ಮತ್ತು ಕನ್ನಡದ ಸಂಸ್ಕೃತಿಯ ಕ			
CO2 ಕನ್ನಡ ಸ	ಾಹಿತ್ಯದ ಆಧುನಿಕ ಪೂರ್ವ ಮತ್ತು ಆಧುನಿಕ	ಕಾವ್ಯಗಳನ್ನು ಸಾಂ	ಕೇತಿಕವಾಗಿ ಕಲಿತು	ು ಹೆಚ್ಚಿನ ಓದಿಗೆ
ಮತ್ತು ಜಾ	್ಞ ನಕ್ಕೆ ಸ್ಪೂರ್ತಿ ಮೂಡುತ್ತದೆ.			
_	ಗಳಲ್ಲಿ ಸಾಹಿತ್ಯ ಮತ್ತು ಸಂಸ್ಕೃತಿಯ ಬಗ್ಗೆ ಅ	ರಿವ ಹಾಗೂ ಆಸಕಿಂ	ಗುವು ಹೆಚ್ಚಾಗುತ	ನೆ
	ವ್ಯಕ್ತಿಗಳ ಪರಿಚಯ ಹಾಗೂ ಅವರುಗಳ ಸಾಧಿ			
-	್ಯತ್ರೆಗಳ ಪಂಜಂಜ ಜಾಗಾಂ ಂಜಂಗಳ ಸಂಭ ಬಗ್ಗೆ ತಿಳಿದುಕೊಳ್ಳಲು ಕೌತುಕತೆ ಹೆಚ್ಚಾಗುತ್ತ			
			ತುದು	
	escribed Textbook :		5000.	
Oniversity Pi	ಸಾಂಸ್ಕೃತಿಕ	ಕನ್ನಡ		
	ಡಾ. ಹಿ.ಚಿ.ಬೋರಲಿಂಗಯ್ಯ ಮತ		ಮ್ಮೇಶ,	
			వి.	
	ಪ್ರಕಟಣೆ : ಪ್ರಸಾರ ವಿಶ್ವೇಶ್ವರಯ್ಯ ತಾಂತ್ರಿಕ ವಿಶ್ವವಿ			
2.	ವಿಶ್ವೇಶ್ವರಯ್ಯ ತಾಂತ್ರಿಕ ವಿಶ್ವವಿ ಮೇಲಿನ ಪಠ್ಯಕ್ರಮಕ್ಕೆ ಸೀಮಿತವಾಗಿ ಅಂತಿಮ ಮೇಲಿನ ಪಠ್ಯಕ್ರಮವನ್ನು ಹೊರತುಪಡಿಸಿದ ಸಾ ಗದ್ಯ ಭಾಗ ಹಾಗೂ ಇತರ ಲೇಖನಗಳನ್ನು ಹೆಚ ಪರೀಕ್ಕೆಯಲ್ಲಿ ಈ ಪಾಠಗಳಿಂದ ಪ್ರಶ್ನೆಗಳನ್ನು ಕ	ಸರೀಕ್ಷೆಯ ಪ್ರಶ್ನೆಪತ್ರಿ ಎಂಸ್ಕೃತಿಕ ಕನ್ನಡ ಪಣ ಸ್ಕ್ರಿವರಿ ಪೂರಕ ಓದಿಗ ಕೇಳಲಾಗುವುದಿಲ್ಲ.	ಶ್ಯಪುಸ್ತಕದಲ್ಲಿನ ಉ ಾಗಿ ಬಳಸಿಕೊಳ್ಳಬಕ	
2.	ವಿಶ್ವೇಶ್ವರಯ್ಯ ತಾಂತ್ರಿಕ ವಿಶ್ವವಿ ಮೇಲಿನ ಪಠ್ಯಕ್ರಮಕ್ಕೆ ಸೀಮಿತವಾಗಿ ಅಂತಿಮ ಮೇಲಿನ ಪಠ್ಯಕ್ರಮವನ್ನು ಹೊರತುಪಡಿಸಿದ ಸಾ ಗದ್ಯ ಭಾಗ ಹಾಗೂ ಇತರ ಲೇಖನಗಳನ್ನು ಹೆಚ	ಪರೀಕ್ಲೆಯ ಪ್ರಶ್ನೆಪತ್ರಿ ಅಂಸ್ಕೃತಿಕ ಕನ್ನಡ ಪಡ ಸ್ಕುವರಿ ಪೂರಕ ಓದಿಗ ಕೇಳಲಾಗುವುದಿಲ್ಲ.	ಶ್ಯಪುಸ್ತಕದಲ್ಲಿನ ಉ ಾಗಿ ಬಳಸಿಕೊಳ್ಳಬಕ ========	ಕುದು. ಅಂತಿಮ
2. 	ವಿಶ್ವೇಶ್ವರಯ್ಯ ತಾಂತ್ರಿಕ ವಿಶ್ವವಿ ಮೇಲಿನ ಪಠ್ಯಕ್ರಮಕ್ಕೆ ಸೀಮಿತವಾಗಿ ಅಂತಿಮ ಷ ಮೇಲಿನ ಪಠ್ಯಕ್ರಮವನ್ನು ಹೊರತುಪಡಿಸಿದ ಸಾ ಗದ್ಯ ಭಾಗ ಹಾಗೂ ಇತರ ಲೇಖನಗಳನ್ನು ಹೆಚ ಪರೀಕ್ತೆಯಲ್ಲಿ ಈ ಪಾಠಗಳಿಂದ ಪ್ರಶ್ನೆಗಳನ್ನು ಕ	ಪರೀಕ್ಲೆಯ ಪ್ರಶ್ನೆಪತ್ರಿ ಎನ್ಕೃತಿಕ ಕನ್ನಡ ಪರ ಸ್ವಿವರಿ ಪೂರಕ ಓದಿಗ ಕೇಳಲಾಗುವುದಿಲ್ಲ. 	ಶ್ಯಪುಸ್ತಕದಲ್ಲಿನ ಉ ಾಗಿ ಬಳಸಿಕೊಳ್ಳಬರ ======== 32331) ಇವರನ್ನು ಸ ್ರಿ & ಬಹು ಆಯ್ಕೆ ವ	ಕುದು. ಅಂತಿಮ ನಂಪರ್ಕಿಸಿ.
2. 3. 4. Activity Based Lear	ವಿಶ್ವೇಶ್ವರಯ್ಯ ತಾಂತ್ರಿಕ ವಿಶ್ವವಿ ಮೇಲಿನ ಪಠ್ಯಕ್ರಮಕ್ಕೆ ಸೀಮಿತವಾಗಿ ಅಂತಿಮ ಪ ಮೇಲಿನ ಪಠ್ಯಕ್ರಮವನ್ನು ಹೊರತುಪಡಿಸಿದ ಸಾ ಗದ್ಯ ಭಾಗ ಹಾಗೂ ಇತರ ಲೇಖನಗಳನ್ನು ಹೆಚ ಪರೀಕ್ರೆಯಲ್ಲಿ ಈ ಪಾಠಗಳಿಂದ ಪ್ರಶ್ನೆಗಳನ್ನು ಹೆಚ ಪರೀಕ್ತೆಯಲ್ಲಿ ಈ ಪಾಠಗಳಿಂದ ಪ್ರಶ್ನೆಗಳನ್ನು ಇ ಹೆಚ್ಚಿನ ಮಾಹಿತಿ ಮತ್ತು ವಿವರಣೆಗಳಿಗೆ ಡಾ. ಎ ಮಾದರಿ ಪ್ರಶ್ನೆಪತ್ರಿಕೆ, ಕೋರ್ಸ್ ಆಯ್ಕೆ ಮಾಹಿತಿ ಪ್ರಶ್ನೆಗಳ ಕೈಪಿಡಿಗಾಗಿ ವಿಶ್ವವಿದ್ಯಾಲಯದ ವೆಬ್ ming (Suggested Activities in Class)/ Pra	ಪರೀಕ್ಲೆಯ ಪ್ರಶ್ನೆಪತ್ರಿ ಂಸ್ಕೃತಿಕ ಕನ್ನಡ ಪರ ಸ್ವಿವರಿ ಪೂರಕ ಓದಿಗ ಕೇಳಲಾಗುವುದಿಲ್ಲ. 	ಶ್ಯಪುಸ್ತಕದಲ್ಲಿನ ಉಂ ಾಗಿ ಬಳಸಿಕೊಳ್ಳಬರ ======= 32331) ಇವರನ್ನು ಸ ಗ್ರಿ & ಬಹು ಆಯ್ಕೆ ವ ು.	ಕುದು. ಅಂತಿಮ ನಂಪರ್ಕಿಸಿ.
2. 3. 4. ✓ Contents rela ✓ For active pa	ವಿಶ್ವೇಶ್ವರಯ್ಯ ತಾಂತ್ರಿಕ ವಿಶ್ವವಿ ಮೇಲಿನ ಪಠ್ಯಕ್ರಮಕ್ಕೆ ಸೀಮಿತವಾಗಿ ಅಂತಿಮ ಮೇಲಿನ ಪಠ್ಯಕ್ರಮವನ್ನು ಹೊರತುಪಡಿಸಿದ ಸಾ ಗದ್ಯ ಭಾಗ ಹಾಗೂ ಇತರ ಲೇಖನಗಳನ್ನು ಹೆಚ ಪರೀಕ್ರೆಯಲ್ಲಿ ಈ ಪಾಠಗಳಿಂದ ಪ್ರಶ್ನೆಗಳನ್ನು ಕ ಪರೀಕ್ರೆಯಲ್ಲಿ ಈ ಪಾಠಗಳಿಂದ ಪ್ರಶ್ನೆಗಳನ್ನು ಕ ಪರೀಕ್ರೆಯಲ್ಲಿ ಈ ಪಾಠಗಳಿಂದ ಪ್ರಶ್ನೆಗಳನ್ನು ಮ ಹೆಚ್ಚಿನ ಮಾಹಿತಿ ಮತ್ತು ವಿವರಣೆಗಳಿಗೆ ಡಾ. ಎ ಮಾದರಿ ಪ್ರಶ್ನೆಪತ್ರಿಕೆ, ಕೋರ್ಸ್ ಆಯ್ಕೆ ಮಾಹಿತ ಪ್ರಶ್ನೆಗಳ ಕೈಪಿಡಿಗಾಗಿ ವಿಶ್ವವಿದ್ಯಾಲಯದ ವೆಬ್	ಪರೀಕ್ಷೆಯ ಪ್ರಶ್ನೆಪತ್ರಿ ಂಸ್ಕೃತಿಕ ಕನ್ನಡ ಪರ ಸ್ವಿವರಿ ಪೂರಕ ಓದಿಗ ಕೇಳಲಾಗುವುದಿಲ್ಲ. 	ಶ್ಯಪುಸ್ತಕದಲ್ಲಿನ ಉಳ ೫ ಬಳಸಿಕೊಳ್ಳಬಕ ======= 32331) ಇವರನ್ನು ಸ ೨ & ಬಹು ಆಯ್ಕೆ ವ ಎ. ng	ಕುದು. ಅಂತಿಮ ನಂಪರ್ಕಿಸಿ.

## ಸಾಂಸ್ಕೃತಿಕ ಕನ್ನಡ - ಕನ್ನಡ ಬಲ್ಲ ಮತ್ತು ಕನ್ನಡ ಮಾತ್ಯಭಾಷೆಯ ವಿದ್ಯಾರ್ಥಿಗಳಿಗೆ ನಿಗದಿಪಡಿಸಿದ ಪಠ್ಯಕ್ರಮ

# ಬಳಕೆ ಕನ್ನಡ - baLake Kannada (Kannada for Usage)

## ಕನ್ನಡ ಕಲಿಕೆಗಾಗಿ <u>ನಿಗದಿ</u>ಪಡಿಸಿದ ಪಠ್ಯಪುಸ್ತಕ - (Prescribed Textbook to Learn Kannada)

Subject Code	Subject		Stream	Th– Tut-Pr	Credits
22KBK17 / 27	BALAKE KA	NNADA	Humanities and Social Sciences (H.S.S)	1 - 0 - 0	01
CIE : 50	SEE : 50	SEE :	1 hours 30 Minute	es	Total

## Course objectives : ಬಳಕೆ ಕನ್ನಡ ಪಠ್ಯ ಕಲಿಕೆಯ ಉದ್ದೇಶಗಳು:

The course (22KBK17/27) will enable the students,

- 1. To Create the awareness regarding the necessity of learning local language for comfortable and healthy life.
- 2. To enable learners to Listen and understand the Kannada language properly.
- 3. To speak, read and write Kannada language as per requirement.
- 4. To train the learners for correct and polite conservation.
- 5. To know about Karnataka state and its language, literature and General information about this state.

## Course outcome (Course Skill Set)

## ಬಳಕೆ ಕನ್ನಡ ಪಠ್ಯ ಕಲಿಕೆಯಿಂದ ವಿದ್ಯಾರ್ಥಿಗಳಿಗೆ ಆಗುವ ಅನುಕೂಲಗಳು ಮತ್ತು ಫಲಿತಾಂಶಗಳು:

At the end of the course the student will be able to:

C01	To understand the necessity of learning of local language for comfortable life.
C02	To speak, read and write Kannada language as per requirement.
CO3	To communicate (converse) in Kannada language in their daily life with kannada speakers.
CO4	To Listen and understand the Kannada language properly.
C05	To speak in polite conservation.

## Module - 1

### (03 hours of pedagogy)

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

Module - 2	(03 hours of pedagogy)
<ol> <li>ನಾಮಪದಗಳ ಸಂಬಂಧಾರ್ಥಕ ರೂಪಗಳು, ಸಂದೇಹಾಸ್ಪದ ಕ</li> </ol>	ಪ್ರಶ್ನೆಗಳು ಮತ್ತು ಸಂಬಂಧವಾಚಕ
ನಾಮಪದಗಳು - Possessive forms of nouns, dubitive q	uestion and Relative nouns
<ol> <li>ಗುಣ, ಪರಿಮಾಣ ಮತ್ತು ವರ್ಣಬಣ್ಣ ವಿಶೇಷಣಗಳು, ಸಂಖ್ಯಾಪ</li> </ol>	ವಾಚಕಗಳು Qualitative, Quantitative and
Colour Adjectives, Numerals	
3. ಕಾರಕ ರೂಪಗಳು ಮತ್ತು ವಿಭಕ್ತಿ ಪ್ರತ್ಯಯಗಳು ⊸ಸಪ್ತಮಿ ವಿಭಕ್ತಿ ಪ್ರತ್ಯಯ – (ಆ, ಅಂ	ದು, ಅವು, ಅಲ್ಲಿ) –Predictive Forms, Locative Case
Module - 3	(03 hours of pedagogy)
l. ಚತುರ್ಥಿ ವಿಭಕ್ತಿ ಪ್ರತ್ಯಯದ ಬಳಕೆ ಮತ್ತು ಸಂಖ್ಯಾವಾಚಕಗಳು - Dative Case	s, and Numerals
2. ಸಂಖ್ಯಾಗುಣವಾಚಕಗಳು ಮತ್ತು ಬಹುವಚನ ನಾಮರೂಪಗಳು -Ordinal nu	merals and Plural markers
<ol> <li>ನ್ಯೂನ/ನಿಷೇಧಾರ್ಥಕ ಕ್ರಿಯಾಪದಗಳು &amp; ವರ್ಣ ಗುಣವಾಚಕಗಳು – Defecti</li> </ol>	ve/Negative Verbs & Colour Adjectives
Module- 4	(03 hours of pedagogy)
1. ಅಪ್ಪಣೆ / ಒಪ್ಪಿಗೆ, ನಿರ್ದೇಶನ, ಪ್ರೋತ್ಸಾಹ ಮತು ಒತ್ತಾಯ ಆರ್ಥರ	ೊಪ ಪದಗಳು ಮತ್ತು ವಾಕ್ಯಗಳು
Permission, Commands, encouraging and Urging words (Impe	rative words and sentences)
2. ಸಾಮಾನ್ಯ ಸಂಭಾಷಣೆಗಳಲ್ಲಿ ದ್ವಿತೀಯ ವಿಭಕ್ತಿ ಪ್ರತ್ಯಯಗಳು ಮತ	ಟ್ತ ಸಂಭವನೀಯ ಪ್ರಕಾರಗಳು
Accusative Cases and Potential Forms used in General Commun	ication
3. "ಇರು ಮತ್ತು ಇರಲ್ಲ" ಸಹಾಯಕ ಕ್ರಿಯಾಪದಗಳು, ಸಂಭಾವ್ಯಸೂಬ	ಕಕ ಮತ್ತು ನಿಷೇಧಾರ್ಥಕ ಕ್ರಿಯಾ ಪದಗಳು -
Helping Verbs "iru and iralla", Corresponding Future and Negatio	n Verbs
<ol> <li>ಹೋಲಿಕೆ (ತರತಮ), ಸಂಬಂಧ ಸೂಚಕ, ವಸ್ತು ಸೂಚಕ ಪ್ರತ್ಯಯ</li> </ol>	ಂಗಳು ಮತ್ತು ನಿಷೇಧಾರ್ಥಕ ಪದಗಳ ಬಳಕೆ-
Comparitive, Relationship, Identification and Negation Words	
Module - 5	(03 hours of pedagogy)
1. ಕಾಲ ಮತ್ತು ಸಮಯದ ಹಾಗೂ ಕ್ರಿಯಾಪದಗಳ ವಿವಿಧ ಪ್ರಕಾರಗಳ	-Different types of Tense. Time and Verbs
2. ದ್, -ತ್, - ತು, - ಇತು, - ಆಗಿ, - ಅಲ್ಲ, - ಗ್, -ಕ್, ಇದೆ, ಕ್ರಿಯಾ ಪ್ರತ್ಯಂ	
ವರ್ತಮಾನ ಕಾಲ ವಾಕ್ಯ ರಚನೆ - Formation of Past, Future and	
3. Kannada Vocabulary List :ಸಂಭಾಷಣೆಯಲ್ಲಿ ದಿನೋಪಯೋಗಿ ಕನ್ನ	್ನಡ ಪದಗಳು -Kannada Words in Conversation
University Prescribed Textbook :	
<ul> <li>Construction of the second state of the second state</li></ul>	
ಬಳಕೆ ಕನ್ನಡ	
ಡಾ. ಎಲ್. ತಿಮ್ಮೇಶ	
ಪ್ರಕಟಣೆ : ಪ್ರಸಾರಾಂ	ಗ,
ವಿಶ್ವೇಶ್ವರಯ್ಯ ತಾಂತ್ರಿಕ ವಿಶ್ವವಿದ್ಯಾಲ	ುಯ, ಬೆಳಗಾವಿ.
ಸೂಚನೆ :	
	ಯ ಪ್ರಶ್ನೆಪತ್ರಿಕೆ ಇರುತ್ತದೆ.
ವಿಶೇಷ ಸೂಚನೆ : 1. ಮೇಲಿನ ಪಠ್ಯಕ್ರಮಕ್ಕೆ ಸೀಮಿತವಾಗಿ ಅಂತಿಮ ಪರೀಕ್ಷೇ	
ವಿಶೇಷ ಸೂಚನೆ : 1. ಮೇಲಿನ ಪಠ್ಯಕ್ರಮಕ್ಕೆ ಸೀಮಿತವಾಗಿ ಅಂತಿಮ ಪರೀಕ್ಷೆ 2. ಮೇಲಿನ ಪಠ್ಯಕ್ರಮವನ್ನು ಹೊರತುಪಡಿಸಿದ ಬಳಕೆ ಕನ	ನ್ನಡ ಪಠ್ಯಪುಸ್ತಕದಲ್ಲಿನ ಉಳಿದ ಭಾಗಳನ್ನು
ವಿಶೇಷ ಸೂಚನೆ : 1. ಮೇಲಿನ ಪಠ್ಯಕ್ರಮಕ್ಕೆ ಸೀಮಿತವಾಗಿ ಅಂತಿಮ ಪರೀಕ್ಷೆ. 2. ಮೇಲಿನ ಪಠ್ಯಕ್ರಮವನ್ನು ಹೊರತುಪಡಿಸಿದ ಬಳಕೆ ಕಂ ಹೆಚ್ಚುವರಿ ಪೂರಕ ಓದಿಗಾಗಿ ಬಳಸಿಕೊಳ್ಳಬಹುದು. ಅ	ನ್ನಡ ಪಠ್ಯಪುಸ್ತಕದಲ್ಲಿನ ಉಳಿದ ಭಾಗಳನ್ನು
ವಿಶೇಷ ಸೂಚನೆ : 1. ಮೇಲಿನ ಪಠ್ಯಕ್ರಮಕ್ಕೆ ಸೀಮಿತವಾಗಿ ಅಂತಿಮ ಪರೀಕ್ಷೆ 2. ಮೇಲಿನ ಪಠ್ಯಕ್ರಮವನ್ನು ಹೊರತುಪಡಿಸಿದ ಬಳಕೆ ಕನ	ನ್ನಡ ಪಠ್ಯಪುಸ್ತಕದಲ್ಲಿನ ಉಳಿದ ಭಾಗಳನ್ನು
ವಿಶೇಷ ಸೂಚನೆ : 1. ಮೇಲಿನ ಪಠ್ಯಕ್ರಮಕ್ಕೆ ಸೀಮಿತವಾಗಿ ಅಂತಿಮ ಪರೀಕ್ಷೆ 2. ಮೇಲಿನ ಪಠ್ಯಕ್ರಮವನ್ನು ಹೊರತುಪಡಿಸಿದ ಬಳಕೆ ಕನ ಹೆಚ್ಚುವರಿ ಪೂರಕ ಓದಿಗಾಗಿ ಬಳಸಿಕೊಳ್ಳಬಹುದು. ಅ ಪ್ರಶ್ನೆಗಳನ್ನು ಕೇಳಲಾಗುವುದಿಲ್ಲ.	ನ್ನಡ ಪಠ್ಯಪುಸ್ತಕದಲ್ಲಿನ ಉಳಿದ ಭಾಗಳನ್ನು ಂತಿಮ ಪರೀಕ್ಷೆಯಲ್ಲಿ ಈ ಪಾಠಗಳಿಂದ
ವಿಶೇಷ ಸೂಚನೆ : 1. ಮೇಲಿನ ಪಠ್ಯಕ್ರಮಕ್ಕೆ ಸೀಮಿತವಾಗಿ ಅಂತಿಮ ಪರೀಕ್ಷೆ. 2. ಮೇಲಿನ ಪಠ್ಯಕ್ರಮವನ್ನು ಹೊರತುಪಡಿಸಿದ ಬಳಕೆ ಕನ ಹೆಚ್ಚುವರಿ ಪೂರಕ ಓದಿಗಾಗಿ ಬಳಸಿಕೊಳ್ಳಬಹುದು. ಅ ಪ್ರಶ್ನೆಗಳನ್ನು ಕೇಳಲಾಗುವುದಿಲ್ಲ. 	ನ್ನಡ ಪಠ್ಯಪುಸ್ತಕದಲ್ಲಿನೆ ಉಳಿದ ಭಾಗಳನ್ನು ಂತಿಮ ಪರೀಕ್ಷೆಯಲ್ಲಿ ಈ ಪಾಠಗಳಿಂದ ಬ್ಬೇಶ (9900832331) ಇವರನ್ನು ಸಂಪರ್ಕಿಸಿ.
ವಿಶೇಷ ಸೂಚನೆ : 1. ಮೇಲಿನ ಪಠ್ಯಕ್ರಮಕ್ಕೆ ಸೀಮಿತವಾಗಿ ಅಂತಿಮ ಪರೀಕ್ಷೆ 2. ಮೇಲಿನ ಪಠ್ಯಕ್ರಮವನ್ನು ಹೊರತುಪಡಿಸಿದ ಬಳಕೆ ಕನ ಹೆಚ್ಚುವರಿ ಪೂರಕ ಓದಿಗಾಗಿ ಬಳಸಿಕೊಳ್ಳಬಹುದು. ಅ ಪ್ರಶ್ನೆಗಳನ್ನು ಕೇಳಲಾಗುವುದಿಲ್ಲ.	ನ್ನಡ ಪಠ್ಯಪುಸ್ತಕದಲ್ಲಿನ ಉಳಿದ ಭಾಗಳನ್ನು ಂತಿಮ ಪರೀಕ್ಷೆಯಲ್ಲಿ ಈ ಪಾಠಗಳಿಂದ ಬ್ಮೀಶ (9900832331) ಇವರನ್ನು ಸಂಪರ್ಕಿಸಿ. ಯನ ಸಾಮಗ್ರಿ & ಬಹು ಆಯ್ಕೆ ಮಾದರಿಯ

Pattern of question paper7. SEE Paper shall be set for 50 questions, each carrying 1 mark. The pattern of the question paper is MCQ

		INNOVATION and DESIGN THINKIN	NG	
Subi	ect code	21IDT18/28	Credit: 01	
v	s/Week:	1 hour. (Theory)	SEE: 50 Marks	
Total	hours: 25	CIE: 50 Marks	SEE: 2 hours	
_		MODULES		Hours
		Module-I		
PROCESS OF	DESIGN			
Understanding	Design thinking			
		- Theory and practice in Design thinking	- Explore presentation signers	
	/IVP or Prototyping			
- 	Tutur 1 of an alta dal			
Teaching-		he design thinking: Chalk and Talk method		
Learning Process		through presentation MVP and Prototyping		
Process	through live example	Module-II		
Tools for Desig	n Thinking	Middule-11		
Tools for Desig	8	and analyzing Enghling officient collaboratio	n in digital anago Empothy	
	laboration in distribut	and analysis – Enabling efficient collaboratio	in in digital space – Empathy	
Teaching-		sign thinking for real-time interaction and an	values a Simulation avaraises for	
Learning	collaborated enabled		arysis simulation exercises for	
Process		e success of collaborated design thinking		
1100033	Live examples on un	Module-III		
Design Think	ting in IT Design Th	inking to Business Process modeling – Agile i	n Virtual collaboration	
	- Scenariobased Proto			
Teaching-		ign thinking and business acceptance of the d	lesign Simulation on the role of	
Learning		for collaborated prototyping	lesign Simulation on the fole of	
Process	virtual ceo system i	or conaborated prototyping		
110005		Module -IV		
DT For strategi	ic innovations			
		- Strategic Foresight - Change - Sense Maki	ng - Maintenance Relevance –	
		etition – experience design - Standardizatio		
		and Organization – Business Model design.		
Teaching-         Business model examples of successful designs				
Learning		tudents on the success of design Live project	on design thinking in a group of	
Process	4 students			
		Module-V		
Design thinking	workshop Design Thi	inking Work shop Empathize, Design, Ideate,	Prototype and Test	
Teaching-		king workshop from the expect and then pre		
Learning	learning from the w		-	
Process Text book:	-	-		
	D Varanitz Stanhan	O'Brien and John P. Hutchinson, "Engineerin	a Design" Congranal coming	
	ernational edition) Sec		g Design , Cengagerearning	
			ver Compatitive Adventage" Harry	rd
	iness Press, 2009.	n of Business: Why Design Thinking is the Ne	,Harva	uu
		Mainel and Lamy Laifer (ada) "Design Think	ing Understand Improve	
		Meinel and Larry Leifer (eds), "Design Think	ing: Understand – Improve	
-	oply", Springer, 2011			
		inking for Strategic Innovation: What They Ca	int Teach You at Businessor Desig	gn
	ool", John Wiley & So	bits 2013.		
Reference bo				11
		1.Shahin, "Engineering Design Process", Ceng		
		with Design Thinking - Ten Stories of What V		
		20 Sep 2013 by Jeanne Liedtka (Author), Andr	rew King (Author), Kevin Bennett	
,	thor).	A. d	1	
		At the end of the course the student will be ab	DIE TO:	]
	opreciate various desig			
		design ideas through differenttechnique		
		ce of reverse Engineering to Understand prod	ucts	
CO4 Dr	aw technical drawing	for design ideas		

		atics-II for Mechanical En Based Credit System (CBC		
		the academic year 2022-23		
	Course Code	22MATM21	<b>CIE Marks</b>	50
	Credits	04	SEE Marks	50
	Course Type	Integrated		
	Contact Hours/Week (L-T-P)	2-2-2	<b>Total Marks</b>	100
	Contact Hours of Pedagogy	42 hours Theory +10 Lab slots	Exam Hours	03
Vector D divergence Vector In flux. State	Module-1 Vector tion to Vector Calculus in Mechanic ifferentiation: Scalar and vector fields ee - physical interpretation, solenoidal a ntegration: Line integrals, Surface inte ement of Green's theorem and Stoke's ly: Volume integral and Gauss diverge	al Engineering application s. Gradient, directional deri and irrotational vector fields egrals. Applications to work theorem. Problems.	vative, curl and s. Problems.	
	ions: Heat and mass transfer, oil refine		l engineering. Analysis o	f streamlines,
velocity a	and acceleration of a moving particle.(I Module-2 Ordinary Differential			
variation Self-Stud undeterm <u>Applicati</u> Module-3 Importan Formation integratio Lagrange Self-Stud separation <u>Applicati</u> Module- Importan Solution of Problems divided d Numeric: Self-Stud Applicati	rder linear ODEs with constant coeffici of parameters, Cauchy's and Legendre ly: Formulation and solution of Cantile ined coefficients. ions: Oscillations of a spring, Transmis <b>3 Partial Differential Equations (PDI</b> <b>nce of partial differential equations f</b> n of PDE's by elimination of arbitrary on thomogeneous PDEs involving derive 's linear PDE. Derivation of one-dimer ly: Solution of one-dimensional heat each n of variables. ions: Design of structures (vibration of <b>4 Numerical Methods -1</b> nce of numerical methods for discret of algebraic and transcendental equation . Finite differences, Interpolation using ifference and Lagrange's interpolation al integration: Trapezoidal, Simpson's ly: Bisection method, Lagrange's inver- ions: Estimating the approximate roots ate solutions to Mechanical engineerin	s's homogeneous differentia ever beam. Finding the solu- ssion lines, Highway engine Es) (5L+3 for Civil Engineering appli- constants and functions. Sol- vatives with respect to one in asional heat equation and we quation and wave equation for <u>Frod/membrane</u> )( <b>RBT Leve</b> (6L+3 <b>T</b> ) e data in the field of Mech- ons: Regula-Falsi and Newtor g Newton's forward and back formulae (All formulae wi (1/3)rd and (3/8)th rules (we rse Interpolation. c, extremum values, Area, we g problems. ( <b>RBT Levels:</b>	I equations- Problems. tion by the method of eering.( <b>RBT Levels: L1</b> , <b>T</b> ) <b>ications</b> lution of nonhomogeneou independent variable only ave equation. by the method of <b>els: L1, L2 and L3</b> ) <b>con-Raphson methods (on</b> ckward difference formul thout proof). Problems <i>v</i> ithout proof),Examples olume, and surface area. <b>L1, L2 and L3</b> )	us PDE by dire y. Solution of ly formulae). ae, Newton's Finding
	Module	e-5 Numerical Methods -2	(5L-	+3T)
Introduc	tion to various numerical techniques	for handling Mechanical	Engineering applicatio	ns.
Numeric: equations	al Solution of Ordinary Differential of first order and first degree – Taylor der and Milne's predictor-corrector for	Equations (ODE's): Nume	erical solution of ordinary Euler's method, Runge-J	y differential
	ly: Adam-Bashforth method.			
Self-Stud				
	ions: Finding approximate solutions to	ODE related to Mechanica	l engineering fields	

2	Verification of Green's theorem					
3	Solutions of Second-order ordinary differential equations with initial/boundary					
	conditions					
4	Solution of a differential equation of oscillations of a spring/deflection of a beam with					
	different loads					
5	Solution of one-dimensional heat equation and wave equation					
6	Solution of algebraic and transcendental equations by Regula-Falsi and Newton-Raphson					
	method					
7	Interpolation/Extrapolation using Newton's forward and backward difference formula					
8	Computation of area under the curve using Trapezoidal, Simpson's (1/3) <sup>rd</sup> and (3/8) <sup>th</sup> rule					
9	Solution of ODE of first order and first degree by Taylor's series and Modified Euler's method					
10	Solution of ODE of first order and first degree by Runge-Kutta 4th order and Milne's					
	predictor-corrector method					
.Sugge	ested software's: Mathematica/MatLab/Python/Scilab					
Cours	e outcome (Course Skill Set)					
At the	end of the course the student will be able to:					
CO 1						
	surface integral.					
CO 2						
CO 3						
CO 4						
	phenomena.					
CO 5	5					
	Mathematica/MatLab/Python/Scilab					
00	sted Learning Resources:					
	(Title of the Book/Name of the author/Name of the publisher/Edition and Year)					
Text E						
	<b>B. S. Grewal</b> : "Higher Engineering Mathematics", Khanna publishers, 44th Ed., 2021. <b>E. Kreyszig</b> : "Advanced Engineering Mathematics", John Wiley & Sons, 10th Ed., 2018.					
	ence Books					
	<i>J.</i> Ramana: "Higher Engineering Mathematics" McGraw-Hill Education, 11th Ed., 2017					
	Srimanta Pal & Subodh C. Bhunia: "Engineering Mathematics" Oxford University Press,3rd Ed.,					
2016.	Annunu Fur e Bubbun et Bhumu. Engineering Muthemutes Oxford Entversity 11055,514 Ed.,					
	N.P Bali and Manish Goyal: "A textbook of Engineering Mathematics" Laxmi					
	ublications, 10th Ed., 2022.					
	C. Ray Wylie, Louis C. Barrett: "Advanced Engineering Mathematics" McGraw – Hill Book Co.,					
	ork, 6th Ed., 2017.					
5. 0	Gupta C.B, Sing S.R and Mukesh Kumar: "Engineering Mathematic for Semester Iand II", Mc-Graw					
	ducation(India) Pvt. Ltd 2015.					
	H. K. Dass and Er. Rajnish Verma: "Higher Engineering Mathematics" S. Chand					
	Publication, 3rd Ed., 2014.					
	ames Stewart: "Calculus" Cengage Publications, 7th Ed., 2019.					
	David C Lay: "Linear Algebra and its Applications", Pearson Publishers, 4th Ed., 2018.					
	Gareth Williams: "Linear Algebra with applications", Jones Bartlett Publishers Inc., 6th					
	Ed., 2017.					

Course Title:	Chemistry for Mechan	icalEngineering stream	
Course Code:	22CHEM12/22	CIE Marks	50
Course Type		SEE Marks	50
(Theory/Practical/Integrated)	Integrated	Total Marks	100
Feaching Hours/Week (L:T:P:S) <sup>1</sup>	2:2:2:0	ExamHours	03+02
Total Hours of Pedagogy	40 hours Theory +10 to12 Lab slo	ots Credits	04
	nergy; Source, Conversion and		
Fuels: Introduction, calorific value, dete		-	ical problems
GCV and NCV. Green fuels: Introduction, power alcohol,		-	rem procreme
<b>High energy fuels:</b> Production of hydroge			s: Introduction
construction, working, and applications of			
Self-learning: Plastic recycling to fuels an			
	: Corrosion Science and Engine		
Corrosion: Introduction, mechanism of e	lectrochemical corrosion with iro	n as an example, types (di	ifferential met
and aeration), Stress corrosion. Factors			
cathode and polarization).			
Corrosion control: Metal coating-galva	nization, surface conversion coa	ting-anodization and catho	odic protectio
sacrificial anode method. Corrosion testing			
Metal finishing: Introduction, technolo			
Electroplating of chromium. Electroless		plating of nickel.	
Self-learning: Electroless plating of copp			
Module-3: Macromolecules for Engineer Polymers: Introduction, methods of p	· · · ·		
Industrial applications of polyvinylchloride Conducting polymers – synthesis and con Fibers: Introduction, synthesis, properties Plastics: Introduction, synthesis, properti Teflon. Polymer composites: Introduction, proper Self-learning: Biodegradable polymer: In Introduction, classification, properties and Module-4: Phase Rule and Analytical Te	nducting mechanism of Polyacetyl and industrial applications of Key es and industrial applications of rties and applications of fiber reinf atroduction, synthesis, properties a application of lubricants.	vlar and Polyester. poly(methyl methacrylate forcedpolymers composites	s (FRPC).
Phase rule: Introduction, Definition of	terms: phase, components, degre	e of freedom, phase rule	equation. Pha
diagram: Two component-lead-silver syste	em.	-	-
Analytical techniques: Introduction, pri			
estimation of iron, Coductometric Titrat			
application in the estimation of the coppe	r, pH-sensor (Glass electrode); its	s application in the determ	ination of pH
beverages.	of his fuel and its completion with	tommonotano	
Self-learning: Determination of viscosity		temperature.	
Module-5: Water technology and Nanot			• .•
Water technology: Introduction, sources emporary, permanent and total hardness			
Process, determination of COD, numeric			
nethods.	a problems. Furnication of wat	er by reverse osmosis a	
Nanotechnology: Introduction, properties water treatment (metal oxide)	and engg.application of carbon na	notubes,grapheme and nan	omaterials for
Self-learning:Introduction, classification, 1	properties and application of silico	on carbide.	

4 D	PRACTICAL MODULE
A - De	emonstration (any two) offline/virtual:
	/nthesis of polyurethane
	eparation of urea formaldehyde resinA3. Synthesis of iron oxide
	articles A4. Determination of acid value of biofuel <i>xercise (compulsorily any 4 to be conducted):</i>
	bonductometric estimation of acid mixture
	state of the sumation of FAS using K2Cr2O7
	etermination of pKa of vinegar using pH sensor (Glass electrode)
B4. De	etermination of rate of corrosion of mild steel by weight loss methodB5. Estimation of total hardness of water by
EDTA	method
<u>C – St</u>	ructured Enquiry (compulsorily any 4 to be conducted):
	stimation of Copper present in electroplating effluent by optical sensor (colorimetry)C2. Determination of Viscosity coefficient of lubricant
	ald's viscometer) stimation of iron in TMT bar by diphenyl amine/external indicator method C4. Estimation of Sodium present in soil/effluent
	e using flame photometry
C5. D	Determination of Chemical Oxygen Demand (COD) of industrial waste water sample
	pen Ended Experiments (any two):
	stimation of percentage of iron in steel
	ectroplating of desired metal on substrateD3. Synthesis of biodiesel
	Identify the terms and applications processes involved in scientific and engineering
	Identify the terms and applications processes involved in scientific and engineering Explain the phenomena of chemistry to describe the methods of engineering
proces	
	Solve the problems in chemistry that are pertinent in engineering applications
CO4.	Apply the basic concepts of chemistry to explain the chemical properties and processes
CO5.	Ayze properties and multidisciplinary situations processes associated with chemical substances in
	sted Learning Resources:
	(Title of the Book/Name of the author/Name of the publisher/Edition and Year)
	Wiley Engineering Chemistry, Wiley India Pvt. Ltd. New Delhi, 2013- 2 <sup>nd</sup> Edition.
	Engineering Chemistry, Satyaprakash & Manisha Agrawal, Khanna Book Publishing, Delhi
9.	A Text Book of Engg. Chemistry, Shashi Chawla, Dhanpat Rai & Co. (P) Ltd.
10.	Essentials of Physical Chemistry, Bahl&Tuli, S.Chand Publishing
11.	Applied Chemistry, Sunita Rattan, Kataria 5. Engineering Chemistry, Baskar, Wiley
12.	Engineering Chemistry – I, D. Grour Krishana, Vikas Publishing
7. A	A Text book of Engineering Chemistry, SS Dara & Dr. SS Umare, S Chand & Company Ltd., 12 <sup>th</sup>
	Edition, 2011.
29.	A Text Book of Engineering Chemistry, R.V. Gadag and Nityananda Shetty, I. K. InternationalPublishing house. 2nd Edition, 2016.
30.	Text Book of Polymer Science, F.W. Billmeyer, John Wiley & Sons, 4 <sup>th</sup> Edition, 1999.
	Nanotechnology A Chemical Approach to Nanomaterials, G.A. Ozin & A.C. Arsenault, RSCPublishing, 2005.
	Corrosion Engineering, M. G. Fontana, N. D. Greene, McGraw Hill Publications, New York, 3 <sup>rd</sup> Edition, 1996.
	Linden's Handbook of Batteries, Kirby W. Beard, Fifth Edition, McGraw Hill, 2019.
	OLED Display Fundamentals and Applications, Takatoshi Tsujimura, Wiley–Blackwell , 2012
	Supercapacitors: Materials, Systems, and Applications, Max Lu, Francois Beguin, Elzbieta Frackowiak, Wiley-VCH; 1st edition, 2013.
	"Handbook on Electroplating with Manufacture of Electrochemicals", ASIA PACIFIC BUSINESSPRESS Inc., 2017. Dr. H. Panda,
	Expanding the Vision of Sensor Materials. National Research Council 1995, Washington, DC: TheNational Academies Press. doi: 10.17226/4782
	10.17226/4782.
	Engineering Chemistry, Edited by Dr. Mahesh B and Dr. Roopashree B, Sunstar Publisher, Bengaluru, ISBN 978-93-85155-70-3, 2022
	High Performance Metallic Materials for Cost Sensitive Applications, F. H. Froes, et al. John Wiley& Sons, 2010
	Instrumental Methods of Analysis, Dr. K. R. Mahadik and Dr. L. Sathiyanarayanan, NiraliPrakashan, 2020
	Principles of Instrumental Analysis, Douglas A. Skoog, F. James Holler, Stanley R. Crouch SeventhEdition, Cengage Learning, 2020
	Polymer Science, V R Gowariker, N V Viswanathan, Jayadev, Sreedhar, Newage Int. Publishers,4th Edition, 2021
	Engineering Chemistry, P C Jain & Monica Jain, Dhanpat Rai Publication, 2015-16 <sup>th</sup> Edition.
	Nanostructured materials and nanotechnology, Hari Singh, Nalwa, academic press, 1 <sup>st</sup> Edition, 2002.
45	Nanotechnology Principles and Practices, Sulabha K Kulkarni, Capital Publishing Company, 3 <sup>rd</sup> Edition 2014
45.	Principles of nanotechnology, Phanikumar, Scitech publications, 2 <sup>nd</sup> Edition, 2010.
	Chemistry for Engineering Students, B. S. Jai Prakash, R. Venugopal, Sivakumaraiah & PushpaIyengar., Subash Publications, 5 <sup>th</sup>
46.	
46. 47.	
46. 47.	Edition, 2014
46. 47. 48.	

Course Title:	COMPUTER AIDED ENGINEERING DRAWING		
Course Code	22CED13/23	CIE Marks	50
Teaching Hour/Week (L:T:P:S)	2:0:2:0	SEE Marks	50
Total Hours of Teaching - Learning	40	Total Marks	100
Credits	03	Exam Hours	03
	Module-1	1	1

### Introduction: for CIE only

Significance of Engineering drawing, BIS Conventions of Engineering Drawing, Free hand sketching of engineering drawing, Scales. Introduction to Computer Aided Drafting software, Co-ordinate system and reference planes HP, VP, RPP & LPP of 2D/3D environment. Selection of drawing sheet size and scale. Commands and creation of Lines, coordinate points, axes, polylines, square, rectangle, polygons, splines, circles, ellipse, text, move, copy, off-set, mirror, rotate, trim, extend, break, chamfer, fillet and curves.

#### **Orthographic Projections of Points, Lines and Planes:**

Introduction to Orthographic projections: Orthographic projections of points in 1st and 3rd quadrants. Orthographic projections of lines (Placed in First quadrant only).

Orthographic projections of planes viz triangle, square, rectangle, pentagon, hexagon, and circular laminae (Placed in

First quadrant only using change of position method).

Application on projections of Lines & Planes (For CIE only)

Module-2

### **Orthographic Projection of Solids:**

Orthographic projection of right regular solids (Solids Resting on HP only): Prisms & Pyramids (square, pentagon, hexagon), Cylinders, Cones, Cubes.

Projections of Frustum of cone and pyramids (For practice only, not for CIE and SEE).

### Module-3

### **Isometric Projections:**

Isometric scale, Isometric projection of hexahedron (cube), right regular prisms, pyramids, cylinders, cones and spheres. Isometric projection of combination of two simple solids.

### Conversion of simple isometric drawings into orthographic views.

Problems on applications of Isometric projections of simple objects / engineering components.

Introduction to drawing views using 3D environment (For CIE only).

### Module-4

#### **Development of Lateral Surfaces of Solids:**

Development of lateral surfaces of right regular prisms, cylinders, pyramids and cones resting with base on HP only. Development of lateral surfaces of their frustums and truncations.

Module-5

### Multidisciplinary Applications & Practice (For CIE Only):

Free hand Sketching; True free hand, Guided Free hand, Roads, Buildings, Utensils, Hand tools & Furniture's etc Drawing Simple Mechanisms; Bicycles, Tricycles, Gear trains, Ratchets, two-wheeler cart & Four-wheeler carts todimensions etc Electric Wiring and lighting diagrams; Like, Automatic fire alarm, Call bell system, UPS system, Basic power distribution system using suitable software

Basic Building Drawing; Like, Architectural floor plan, basic foundation drawing, steel structures- Frames, bridges, trusses using Auto CAD or suitable software,

Electronics Engineering Drawings- Like, Simple Electronics Circuit Drawings, practice on layers concept.

Graphs & Charts: Like, Column chart, Pie chart, Line charts, Gantt charts, etc. using Microsoft Excel or any suitable software. **Course Outcomes** 

At the end of the course the student will be able to:

**CO 1.** Draw and communicate the objects with definite shape and dimensions

**CO 2.** Recognize and Draw the shape and size of objects through different views

CO 3. Develop the lateral surfaces of the object

CO 4. Create a Drawing views using CAD software.

CO 5. Identify the interdisciplinary engineering components or systems through its graphical representation.

Intro	duction To Civil Engine	ering	
Subject code	22ESC141/241	Credit: 03	
Hours/Week:	3 hours. (Theory)	SEE: 50 Marks	
Total hours: 42	CIE: 50 Marks	SEE: 3 hours	
	MODULES		Hour s
Surveying, Building Materials, Structural Engineering, Hydra Transportation Engineering, Env Civil Engineer in the infrastruc socio — economic development	Module-I ing, Scope of different field of Construction Technology, Geo Julics, Water resources and In ironmental Engineering. Types of tural development, Effect of infra- t of a country. Roads: Types of r us: Different types with simple sket	technical Engineering, rrigation Engineering, infrastructure, Role of astructural facilities on oads, Components and	8 hours
	Module-II		
body and Point force, Newton's units, Elements of a force, Clas independence of forces, Principl of forces, Resolution of forces, coplanar concurrent force syste coplanar concurrent force syste	hanics: Basic idealizations — Part laws of motion Definition of fo sification of force and force syste e of superposition of forces, Prince composition of forces, composi m, Numerical examples on comp n. Moment of a force, Couple sy ems on moment of force and cou	rce, Introduction to SI em, Principles physical ciple of transmissibility ition and resolution of position and resolution stem, Equivalent force	10 hours
	Module-III		
Numerical Problems on com Equilibrium of force — Definiti	oncurrent force system, Varignon' position of coplanar non-conc on of Equilibrant, free body diagr stem, Lami's theorem, and numeric	current force system. am, Condition of static	10 hours
	Module -IV		
Types of supports, types of loads, con numerical problems on equilibrium of c statically determinate beams. Friction: Ty Friction, angle of repose, Laws of static f friction, Ladder friction, numerical proble	oplanar non — concurrent force system pes of friction, limiting friction, angle of riction, Impending motion on horizontal	n and support reactions for	12 hours
	Module-V		
Centroid of planes figures: Locating the circle using method of integration, Cer problems. Moment of Inertia of an area, gyration, Perpendicular axis theorem, F Triangular, Semi - circular, and quadrant areas with above elementary areas, numer	troid of simple built-up sections and or rectangular moment of inertia, polar m Parallel axis theorem, Moment of inerti- t areas from method of integration, Mom	composite areas, numerical oment of inertia, Radius of ia of rectangular, Circular,	12 hours
Text book:           1.         S.S. Bhavikatti, "Elements of Civil Engine 2.           Jagadeesh T.R. and Jayaram, "Elements of Civil Engine 2.	neering", (IV edition), Vikas Publishing House Pvt. of Civil Engineering", Sapna Book House, Bangalor		
2. Ferdinand P. Beer and E.Russel Johnstor	lechanics", McGraw-Hill Book Company, New Del Jr., "Mechanics for Engineers: Statics", McGraw-F ata McGraw-Hill Publishing Company, New Delhi	Hill Book Company, New York.	

	Professional Writing Skills in Englis	h	
Subject code	22PWS16/26	Credit: (	
Hours/Week:	1 hour. (Theory)	SEE: 50 Marks	5
Total hours: 15	CIE: 50 Marks	SEE: 1 .5hour	ſS
	MODULES		TeachingHours
	Module-I		
	Writing and Speaking English: Common		
	asal verbs, Auxiliary verbs and their forms,		3 hours
	Subject-verb agreement, Sequence of Tenses	and errors identification	
in Tenses. Words Confused/Misused.	Module-II		
Introduction andConclusion, Importa	ting: Organizing Principles of Paragraph nce of Proper Punctuation, Precise writing Corrections activities. Misplaced modifiers, G	and Techniques in Essay	3 hours
word order, Errors due to the Conrus	Module-III		
writing, Significance of Reports, Typ Technical Proposals, Characteristics of	actices: Technical writing process, Introductions of Reports. Introduction to Technical Profine Proposals. Scientific Writing Process Sentence Improvement, Cloze Test and Th	oposals Writing, Types of rocess. Grammar – Voices	3 hours
	Module -IV		
Barriers, Improving Listening Ski	<b>nployment:</b> Listening Comprehension, Type lls. Reading Comprehension, Tips for oyment/business Letters, Resume vs. Bio D ails, Blog Writing and Memos.	effective reading. Job	3 hours
	Workplace: Group Discussion and	Professional Interviews,	
	GD and PI's, Intra and Interpersonal		
<b>I</b> .	ion Skills and its importance in GD and Int	erview. Presentation skills	3 hours
and Formal Presentations by Students,	Strategies of Presentation Skills.		
Text book:			
	lls in English" published by Fillip Learning		
	per AICTE 2018 Model Curriculum) (ISBN-	978-93-5350-047-4) Cenga	ge learning
India Pvt Limited [Latest E Reference books:	aition 2019].		
	N.P.Sudharshana and C.Savitha, Cambridge	Iniversity Press 2018	
	by Gajendra Singh Chauhan and Et al, (ISB		igage learning
India Pvt Limited [Latest R			-Babe learning
	n – Principles and Practice, Third Edition by	Meenakshi Raman and Sang	eetha Sharma,
Oxford University Press 20	017.		
	nmar & Composition by Wren and Martin,		
	nunication – Second Edition by M Ashraf Ri	zvi, McGraw Hill Education	n (India) Private
Course outcome (Course Skill Set)			
At the end of the course the student			1
	ify the Common Errors in Writing and Speak	ang.	
	nical writing and Presentation skills.	1	
	sals properly and make them to Write good to	ecnnical reports.	
	d Workplace communication skills.	ing in 4:00	
CO5 To learn about Techniqu	es of Information Transfer through presentat	lon in different level.	

	Indian Constitution		
Subject code	22ICO17/27	Credit: 0	1
Hours/Week:	1 hour. (Theory)	SEE: 50 Marks	3
Total hours: 15	CIE: 50 Marks	SEE: 1 hours	
	MODULES		TeachingHours
	Module-I		
Indian Constitution: Necessity of the	e Constitution, Societies before and after t	he Constitution adoption.	
Introduction to theIndian constitution,	Making of the Constitution, Role of the Con-	stituent Assembly.	3 hours
	Module-II		
	tion. Preamble of Indian Constitution &		
	) and its Restriction and limitations in diffe	erent Complex Situations.	3 hours
building.			
	Module-III		
	Policy (DPSP's) and its present relevan		2.1
	and significance in Nation, Union Executiv	ve: Parliamentary System,	3 hours
Union Executive – President, Prime	Module -IV		
Parliament IS and PS Parliame	ntary Committees, Important Parliamentary	Terminologies Indicial	
	dia and other Courts, Judicial Reviews and Ju		3 hours
system of mana, supreme court of m	Module-V		5 110015
State Executive and Governor, CN	I, State Cabinet, Legislature - VS & VI	P. Election Commission.	
	dment to Constitution, and Important Const		3 hours
today. Emergency Provisions.			
Text book:			
11. "Constitution of India" (fo	r Competitive Exams) - Published by	Naidhruva Edutech Lean	rning Solutions,
Bengaluru. – 2022.			
	ntion of India", (Students Edition.) by Du	urga Das Basu (DD Basu)	): Prentice –Hall,
2008.			
Reference books:			
	ofessional Ethics and Human Rights" by S	Shubham Singles, Charles E	. Haries, andet
	earning India, Latest Edition – 2019.		
	a" by Merunandan K B: published by Meru	igu Publication, Second Ed	ition,
Bengaluru.			_
	Students & Youths by Justice HN Nagamo		ekon.
	an, V.S.Senthilkumar, "Engineering Ethics"	, Prentice –Hall, 2004.	
Course outcome (Course Skill Set)	11.1 1.1		
At the end of the course the student			
CO1 Analyse the basic structu		$(\mathbf{D}^{\prime})$	
	nental Rights, DPSP's and Fundamental Duti		1.
	Government, political structure & codes, proc	eaures.	
	ecutive & Elections system of India. Thents and Emergency Provisions, other impor	· · · · · · · · · · · · · · · · · · ·	

Hou	oject code urs/Week: l hours: 15	22SFH18/28	Credit: 0	1
		$1 1 \dots (\mathbf{T})$		
Total	11	1 hour. (Theory)	SEE: 50 Marks	
	I nours: 15	CIE: 50 Marks	SEE: 1 hours	
		MODULES		TeachingHour
of Health, Hea family, Health	alth beliefs, Advantage	Module-I ositive mindset: Health -Importance of He s of good health, Health & Behavior, Hea ological disorders-Methods to improve go	lth & Society, Health &	3 hours
<b>Building of he</b> Nutritional gu	ealthy lifestyles for be idelines for good hea	<b>Module-II</b> tter future: Developing healthy diet for goo lth, Obesity & overweight disorders and th, Wellness and physical function, How to a	its management, Eating	3 hours
Education, the	value of relationship a ding of basic instincts	<b>Module-III</b> ationships : Building communication skills, and communication skills, Relationships for of life (more than a biology), Changing he	r Better or worsening of	3 hours
avoiding of ac Differences be	ddictions, How addiction	<b>Module -IV</b> Characteristics of health compromising belon develops, Types of addictions, influenci and non addictive people & their behaviors. Here	ng factors of addictions,	3 hours
infections, Ho Management o	ow to reduce risks for	<b>Module-V</b> eases for good health: How to protect good health, Reducing risks & coping uality of life, Health & Wellness of youth :a tatus.	with chronic conditions,	3 hours
Univ 20. "Sci Bang 21. Heal	<b>versity Website.</b> <b>ientific Foundations of</b> galore – 2022.	F Health" – Study Material Prepared by D Health", (ISBN-978-81-955465-6-5) publis ktbook, FOURTH EDITION by Jane Ogden Press	hed by Infinite Learning S	olutions,
Reference b 25. Heal Publ 26. HEA Ang 27. SWA 28. Scien refer	ooks: Ith Psychology (Secon lished by Routledge 71 ALTH PSYCHOLOG eles,McGraw Hill Educ AYAM / NPTL/ MOO ntific Foundations of I	d edition) by Charles Abraham, Mark Con I Third Avenue, New York, NY 10017. Y (Ninth Edition) by SHELLEY E. TAYI ation (India) Private Limited - Open Universi CS/ We blinks/ Internet sources/ YouTube Health (Health & Welness) - General Boo rs and published by the reputed publisher.	LOR - University of Calif ity Press. <b>videos</b> and other materials	ornia, Los / notes.
At the end of <b>CO1</b> T	f the course the student of the course the student of the course the student of t	se about Health and wellness (and its Beliefs	) & It's balance for positiv	e mindset.
		tyles for good health for their better future.	1/ 1/ 1/ 10	
		ng relationships to meet the requirements of g		
( ( )4	To learn about Avoiding	g risks and harmful habits in their campus a	and outside the campus fo	r their bright

CO4 For real about Avoiding Hsks and harmful habits in their campus and outside the future.
 CO5 Prevent and fight against harmful diseases for good health through positive mindset.

### **Engineering Science Courses (ESC-I)**

Hours 8 hours
S
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8 hours
10 hours
10 hours
12 hours
12 hou
elhi.
h 1

3. K.L.Kumar, "Engineering Mechanics", Tata McGraw-Hill Publishing Company, New Delhi.

Course Code		22ESC142/242 CIE: 50	
Number of Lecture H	Iours/Week	3hours (Theory) SEE: 50	
Total Number of Lec	ture Hours	40 SEE Hours	
		Modules	Hours
		<u>Module - I</u> and non-conventional energy resources;	<b>Oh</b> wa
		Nuclear, Solar & wind power generation (Block Diagram approach). Laws of Electromagnetic Induction, Fleming's rules, Lenz's law, types of EMF	8hrs
phase, phase diffe current relationsh Active power, rea	erence, aver ip with pha ctive power	<u>Module - II</u> ion of AC Voltage and current, waveform, time period, frequency, amplitude, rage value, RMS value, form factor, peak factor. (only definitions) Voltage and asor diagrams in R, L, and C circuits. Concept of Impedance. Analysis of R-L, r and apparent power. Concept of power factor. (Simple Numerical).	8hrs
Three Phase Circ	euits: Adva	ntages, three phase connections (Star & Delta) (Excluding Derivations).	
		<u>Module - III</u>	
Relation between <b>DC Motor:</b> Prin	induced en ciple of o	operation, constructional details, induced emf expression, types of generators. af and terminal voltage. Simple numerical. peration, back emf and its significance. Torque equation, types of motors,	8hrs
Applications of D	C motors. S	Simple numerical. 3-point starter.	1
		Module - IV	
transformers, EMI Three-phase induc	F equation,	f transformer, principle of operation, Types and construction of singlephase losses, variation of losses with respect to load. Efficiency and simple numerical. magnetic field, Principle of operation, constructional features of motor, types –	8hrs
		r. Slip and its significance simple numerical.	
1 8		Module – V	
<b>Electricity Bill</b> : F Definition of "un electricity bill for	Power ratin nit" used for domestic c	ents, Types of wiring: casing, capping. Two way and three way control of load. g of household appliances including air conditioners, PCs, laptops, printers, etc. or consumption of electrical energy, two-part electricity tariff, calculation of onsumers. es: Working principle of Fuse and Miniature circuit breaker (MCB), merits and	8hrs
Personal safety n	neasures: I	Electric Shock, Earthing and its types, Safety Precautions to avoid shock.	
Question paper p	attern: To	otal ten questions will be asked,two from each module. The student has to answer ne from each module.	five
Reference books:	,		
<ol> <li>J P Tiwat</li> <li>Rajendra</li> <li>B L Ther</li> <li>B L Ther</li> <li>D.P. Kot</li> <li>V. N. Mi</li> <li>R.V. Srir</li> </ol>	ri," Basic E Prasad "Fu aja& A K aja& A K hari and Na ttal and Ar nivasa Murt	lectrical Engineering", New age Publications, 2nd edition, 2011. indamentals of Electrical Engineering", PHI 3rd edition, 2014. Theraja" Electrical Technology", Vol 1, 2nd edition. Theraja" ABC of Electrical Engineering", 2nd edition. agrath "Theory and Problems in electrical Engineering", PHI edition 2011. vind Mittal;, "Basic Electrical Engineering" McGraw Hill. hy "Basic Electrical Engineering" Sanguine Technical Publisher2004.	
Course Code	CO's	Course Outcome (CO)	
	CO1	Understand the concents of various energy sources and Electric sizeits	
	C01	Understand the concepts of various energy sources and Electric circuits.	
	CO2	Apply the basic Electrical laws to solve circuits.	
22ESC142/ 242	CO3	Discuss the construction and operation of various Electrical Machines.	
22E3U142/242	CO4	Identify suitable Electrical machine for practical implementation.	
	CO5	Explain the concepts of electric power transmission and distribution, electrici circuit protective devices and personal safety measures.	ty billin

INTROD	UCTION TO ELECTRO	DNICS ENGINEERI	ING	
Subject Code	22ECSC143/243	22BEE13/23		CIE: 50
Number of Lecture Hours/Week	3 (Theo	ry)		SEE: 50
Total Number of LectureHours	40 CREDITS- 3			SEE Hours: 03
	Module#	÷		<b>Teaching Hours</b>
	Module-1			08 Hours
<b>Power Supplies:</b> Block diagram, Half resistance and voltage regulation, Voltag <b>Amplifiers:</b> CE amplifier with and wi saturation modes.	ge multipliers.			
	Module-2			08 Hours
<b>Operational amplifiers</b> : Ideal op-amp; <b>Practical op-amp circuits:</b> Inverting differentiator. <b>Oscillators:</b> Barkhausen criterion, sinus oscillator (using op-amp), Multivibrators oscillators (Only Concepts, working, and	and non-inverting amplif soidal and non-sinusoidal s, Single-stage astable osc	iers, voltage follower oscillators, Ladder ne illator, Crystal control	etwork	
	Module-3			08 Hours
Complements, Basic definitions, Axiom Algebra, Boolean Functions, Canonical a <b>Combinational logic:</b> Introduction, Des	and Standard Forms, Other	Logic Operations, Di	igital L	
	Module-4			08 Hours
<b>Embedded Systems:</b> Definition, Embedded Major application areas of Embedded Microprocessor vs Microcontroller, RISC Sensors and Interfacing: Instrumentation Segment LED Display.	Systems, Elements of a C vs CISC	an Embedded System	n, Core	of the Embedded System,
	Module-5			08 Hours
Analog Communication Schemes: Mo Transmitter, Channel or Medium – Hard systems. Types of modulation (only cond Digital Modulation Schemes: Advanta Radio signal transmission Multiple access	dwired and Soft wired, N cepts) – AM, FM, Concep ages of digital communica	loise, Receiver, Multi t of Radio wave propa	plexing agation	, Types of communication (Ground, space, sky)
<ul> <li>Text books:</li> <li>5. Mike Tooley, 'Electronic Circuits https://doi.org/10.4324/978131573</li> <li>6. Digital Logic and Computer Design D P Kothari, I J Nagrath, 'Basic Electro CO1 Design basic power supply &amp; study CO2 To analyze working of an arm weaking of an arm working of arm wo</li></ul>	7980. eBook ISBN97813 n, M. Morris Mano, PHI I nics', 2nd edition, McGra y concept of amplifiers.	earning, 2008 ISBN- w Hill Education (Inc	978-81	-2030417-84.
CO2 To analyze working of op-amp with	ith its applications & to	studyoscillators.		
CO3 Develop competence knowledge to make use of basic gate and its function.	o construct basic digital	circuit by		
CO4 Understand the concept of embedd its interfacing.				
CO5 To study various analog and digita	al modulation and demod	ulationtechniques		

Course Title: INTE	INTRODUCTION TO MECHANICAL ENGINEERING			
Course Code:	22ESC144/244	CIE Marks	50	
Course Type	Theory	SEE Marks	50	
(Theory/Practical/Integrated)	-	Total Marks	100	
Teaching Hours/Week (L:T:P: S)	3:0:0:0	Exam Hours	03	
Total Hours of Pedagogy	40 hours	Credits	03	
	Module-1 (8 hours)			

### Introduction to Mechanical Engineering (Overview only):

Role of Mechanical Engineering in Industries and Society- Emerging Trends and Technologies indifferent sectors such as Energy, Manufacturing, Automotive, Aerospace, and Marine sectors.

#### **Steam Formation and Application:**

Modes of heat transfer, Steam formation, Types of steam, Steam properties and applications of steam (simple numerical problems). **Energy Sources and Power Plants:** 

Basic working principles of Hydel power plant, Thermal power plant, nuclear power plant, Solar power plant, Tidal power plant and Wind power plant.

### Module-2 (8 hours)

#### **Machine Tool Operations:**

Lathe: Principle of working of a center lathe, lathe operations: Turning, facing, knurling, threadcutting, taper turning by swivelling the compound rest, **Drilling Machine**: Working of simple drilling machine, drilling operations: drilling, boring, reaming, tapping, counter sinking, counter boring, **Milling Machine**: Working and types of milling machine, milling operations: plane milling, endmilling and slot milling. (No sketches of machine tools, sketches to be used only for explaining the operations). **Introduction to Advanced Manufacturing Systems:** Introduction, components of CNC, advantagesand applications of CNC, 3D printing.

### Module-3 (8 hours)

**Introduction to IC Engines**: Components and working principles, 4-Stroke Petrol and Diesel engines, Application of IC Engines, performance of IC engines (Simple numerical).

**Introduction to Refrigeration and Air Conditioning**: Principle of refrigeration, Refrigerants and their desirable properties. Working principle of VCR refrigeration system, working principle of room air conditioner & Applications of air Conditioners

#### Module-4 (8 hours)

### **Mechanical Power Transmission:**

Gear Drives: Types - spur, helical, bevel, worm and rack and pinion, velocity ratio, simple and compound gear trains (simple numerical problems)

**Belt Drives**: Introduction, Types of belt drives (Flat and V-Belt Drive), length of the belt and tensions ratio (simple numerical problems)**Joining Processes**: Soldering, Brazing and Welding, Definitions, classification of welding process, Arc welding, Gas welding, (types of flames), TIG welding, MIG welding and Fusionwelding.

#### Module-5 (8 hours)

**Insight into future mobility technology;** Electric and Hybrid Vehicles, Components of Electric and Hybrid Vehicles. Advantages and disadvantages of Electric Vehicles (EVs) and Hybrid vehicles.

**Introduction to Mechatronics and Robotics:** open-loop and closed-loop mechatronic systems. Joints & links, Robot anatomy, Applications of Robots in material handling, processing and assembly andinspection.

CO1 Explain the role of mechanical engineering in industry and society, fundamentals of steam and non-conventional energy sources

CO2 Describe different conventional and advanced machining processes, IC engines, propulsive

devices, air-conditioning, refrigeration.

CO3 Explain different gear drives, gear trains, aspects of future mobility and fundamentals of robotics

CO4 Determine the condition of steam and its energy, performance parameters of IC engines, velocity ratio and power transmitted through power transmission systems. CO5 Explain the Working Principle of EV vehicles and concepts of Mechatronics and Robotics

### Suggested Learning Resources:

Test Books (Title of the Book/Name of the author/Name of the publisher/Edition and Year)

29. Elements of Mechanical Engineering, K R Gopala Krishna, Subhash Publications, 2008

**30.** Elements of Workshop Technology (Vol. 1 and 2), Hazra Choudhry and Nirzar Roy, MediaPromoters and Publishers Pvt. Ltd., 2010.

### **Reference Books**

An Introduction to Mechanical Engineering, Jonathan Wickert and Kemper Lewis, Third Edition, 2012

Course Title: Int Course Code:	troduction to C Pr	22ESC145/245	CIE Marks	50
Course Type (Theory/I	Practical	Integrated	SEE Marks	50
/Integrated )	iacucal	integrated	Total Marks	100
Teaching Hours/Week	$(\mathbf{I} \cdot \mathbf{T} \cdot \mathbf{P} \cdot \mathbf{S})$	2:0:2:0	Exam Hours	03
Total Hours of Pedago		40 hours	Credits	03
Total Hours of Fedago	ВУ	MODULES	Cicuits	Ho
		Module-I		
a "C" program, Constan Operators and Expre operators, assignment special operators. Eva	ts, Variables and D ssions, Managing operators, increme iluation of expre cedence and associ	<b>C:</b> Algorithms, Flowcharts, Basic Data types. <b>g Input/ Output:</b> Arithmetic op ent/ decrement operators, conditi ession, precedence of arithmeti ativity. Formatted Input and Outp	erators, relational operator onal operators, bit wise operators, type conve	s, logical hours
statements, the else if la	dder, Switch statem Looping: While sta	on Making with if statement, Simp nent, The ? : operator, Unconditior atement, Do-While statement, For s	al control Statements.	8
examples and exercises. Strings: Declaring and	nal Array, declarati Initializing String	ule-III ion, Initialization, Two dimension Variables, Reading Strings from g-handling functions, examples an	Terminal, Writing strings t	8
defined Functions, Defi Category of functions, I <b>Structures and Unior</b> Members, Structure Ir	nition of functions, Recursion, example <b>is:</b> Defining a St iitialization, Copyi	ructures, Declaration of Structur ng and comparing structure va n, Size of Structures, bit fields, ex	unction calls, Function de re variables, Accessing S riables, operations on inc	eclaration, 8 hours tructure
variables, Initializing c	f pointer variables File Management:	<b>Module-V</b> pointers, Accessing the address s, accessing a variable through Defining and opening a file, closin Examples & exercises.	its pointer, pointer expr	ressions, 8
31. E. Balagurusamy,	"Programming in A	ANSI C", Tata Mcgraw Hill Educat	tion Private Limited-VEdit	tion, 2016
Reference books: 32.Herbert Schildt, "C 33.Yashwant P. Kanet 34.Brian W Kernigha Second Edition, 20	Complete Reference akar, "Let us C", F an & Dennis M F 04.	in C",Fourth Edition, Tata McGra ifth Edition, BPB Publications, 20 Ritchie "The C Progran	w Hill Publication, 2017 16. ming Language", Prentice	e HallPublisher,
35.Behrouz A.Forouza Third edition, Thor Course outcome (Cou	nson Learning, 200	ilberg,"Computer Program: A strue 05.	ctured programmingAppro	ach Using C.",
At the end of the course	· · · ·	be able to:		
		charts and understand the different	data typesand Operators in	C language
<b>*</b>	0	ion /control constructs for solving	** *	Cianguage
		s functions to develop		m
				/111.
CO4 Demonstre	ate the use of structu	ires and apply modular programmi	ng concents	
		ures and apply modular programmi vorld problems using pointers and	* *	

### **Practice Programs:**

- 1.Write a C program using printf statement:
  - a) Print your name and Address.
  - b) Print the pattern:

++ + + + + + +

2.Write a C Program using Scanf statements

a) Read int, char and float values from the keyboard and display the same.

3.Write a c program to find :

i) Area of rectangle

ii) Area of Square

- iii) Area of circle
- 4. Write a c program using if , if...else , nested if and else...if ladder.
  - i) To find whether number is odd or even.
  - ii) To find whether number is +ve or -ve.
  - iii) To find largest of two numbers.
  - iv) To find largest of three numbers.
- 5. Write a c program using while , do-while and for looping statement. i) Print 1 to 10 numbers using all the three looping statements.
- 6. Write a c program using arrays:
  - i) Read 1 to 10 array elements and display the same.
  - ii) Read float elements and display the same.
- iii) Read character and display the same.

7. Write c program using strings:

i. Read a string from keyboard and display the same.

### **Programming Assignments:**

- 61. C Program to find Mechanical Energy of a particle using  $E = mgh+1/2 mv^2$ .
- 62. C Program to convert Kilometers into Meters and Centimeters.
- 63. C Program To Check the Given Character is Lowercase or Uppercase or Special Character.
- 64. Program to balance the given Chemical Equation values x, y, p, q of a simple chemical equation of the type: The task is to find the values of constants b1, b2, b3 such that the equation is balanced on both sides and it must be the reduced form.
- 65. Implement Matrix multiplication and validate the rules of multiplication.
- 66. Compute sin(x)/cos(x) using Taylor series approximation. Compare you result with the built-in library function. Print both the results with appropriate inferences.
- 67. Sort the given set of N numbers using Bubblesort.
- 68. Write functions to implement string operations such as compare, concatenate, string length. Convince the parameter passing techniques.
- 69. Implement structures to read, write and compute average-marks and the students scoring above and below the average marks for a class of N students.
- 70. Develop a program using pointers to compute the sum, mean and standard deviation of all elements stored in an array of N real numbers

### **Emerging Technology Courses(ETC)**

	<b>GREEN BUILDING</b>		
Subject code	22ETC15A	Credit: 0	3
Hours/Week:	3 hours. (Theory)	SEE: 50 Marks	
Total hours: 42	CIE: 50 Marks	SEE: 3 hours	
	MODULES		Hours
Environmental implications of build Introduction to green building, benefits,	<b>Module-I</b> ngs energy, carbon emissions, water site selection, selection of materials.	use, waste disposal.	9 hours
	<b>Module-II</b> cts increasing energy efficiency, recycl iilding, use of renewable energy systems a		9 hours
Comforts in buildings, thermal, light ve incidence of solar energy in materials fo	<b>Module-III</b> entilation in buildings, heat transfer chara r lightening and ventilation comfort.	cteristics in buildings,	8 hours
Energy conservation, concepts of solar p studies on residential and commercial bu	<b>Module -IV</b> assive cooling and heating of building, lov hildings	w energy cooling, Case	8 hours
Water conservation, Rain water harv composite	Module-V esting: definition, types and advantage	s, concepts of green	8 hours
Age International, 2007.	dy and K. S. Nanjundarao. Alternative Bui ael Schwarz "Green Building - Guidebook S.K.Gerg, Khanna publications	-	_
Michael F. Ashby Materials and the Env 3. Jerry Yudelson Green building Throu 4. Mili M. Ajumdar (Ed) Energy Efficie 5. Low Energy Cooling For Sustainable 6.Green My Homel: 10 Steps to Lowerin C. Brewer, ISBN:9781427798411, Publi 7. B. Givoni, Man, Climate and Archited	gh Integrated Design.McGraw Hill, 2009. nt Building in India.Teri and Mnes, 2001 / Buildings. John Wiley and Sons Ltd, 2009 ng Energy Costs and Reducing Your Carbo sher: Kaplan Publishing, Publication Date	2002. on Footprint,by Dennis : October 2008.	(Ed)

Course Code	se Title: Introduction to Solar PV System 22ETC15B/22ETC25B	CIE: 50	
Number of Lecture Hours/Week	3hours (Theory)	SEE: 50	
Total Number of Lecture Hours	40	SEE Hour	
	Modules		Hours
and energy sources and their availibity. So	<u>Module – I</u> ergy consumption as a measure of Prosperity, v olar Resource and Radiation: Solar resources phere on solar radiation, Sun geometry, Geome	s, Quantifying solar	8hrs
arrays.	Module – II		
<b>Solar thermal energy The solar energy</b> thermal collection and storage, thermal ap	option – An overview of thermal application	s: Devices for	8hrs
thermal concerton and storage, mermai ap	Module – III		
Multi crystalline/polycrystalline silicon, Certifications, Warranties, Emerging tec with intrinsic thin layer (HIT) photovoltai <b>PV Cells, Modules and Arrays:</b> C performance, Connecting PV cells to cr	haracteristics of PV cells, Graphic represe eate a module, Specification sheets, Creating	r modules, Standards, cells, Hetero junction entations of PV cell	8hrs
Creating an array, Photovoltaic array per	formance, Irradiance, Temperature, Shading. Module-IV		
inverters, Transformers, Mainstream inv inverter, Modular inverters, Inverter prot equipment: System equipment excluding junction box, Circuit breakers and fuse System monitoring, Metering, Net meter Pitched roof mounts, Pitched roof mount	<b>nents:</b> Introduction, Inverters, Battery inverventer technologies, String inverters, Multi-st tection systems, Self-protection, Grid protection g the PV array and inverter, Cabling, PV coss, PV main disconnects/isolators, Lightning ring, Gross metering. Mounting Systems: Roots for tiled roofs, Pitched roof mounts for meta ms, Ground mounting systems, Ground rack and the systems of the systems.	ring inverter, Central on, Balance of system ombiner box, Module and surge protection, of mounting systems, al roofs Rack mounts,	8hrs
Installing Crid connected BV Systems	Module-V		
lengths, Cable sizing, PV combiner b checklist, Interconnection with the utility <b>System Commissioning:</b> Introduction, System documentation. <b>System Operation and Maintenance:</b>	<b>s:</b> PV array installation, DC wiring, Cabling ox, System grounding/earthling, Inverter ins grid, Required information for installation, Saf Final inspection of system installation, Test System maintenance, PV array maintenance, tifving the problem Troubleshooting DV ar	stallation, Installation ety. ting, Commissioning, Inverter maintenance,	8hrs
underperforming systems, Troubleshootin	tions will be asked, two from each module. The		five
Reference books:			
	voltaic Technology And Systems - A Manual 013 Edition.		ners An
<ul> <li>Handbook for Planning, Design and In</li> <li>3. Chetan Singh Solanki, Solar Photo New Delhi, 3<sup>rd</sup> Edition</li> <li>4. GD Rai, Non Convention Sources of Edition</li> </ul>	-connected Solar Electric Systems: The Earthsc stallation, Routledge; 1st edition 2021. voltaic's: Fundamentals, Technologies And Ap Energy, Khanna Publishers, New Delhi, 5 <sup>th</sup> Edit gy, TMH Publishing Company limited New Del	oplications , PHI Publication	ation

Course Code	CO's	Course Outcome (CO)				
<b>CO1</b> Understand the needs of energy and discuss the solar radiation.						
	CO2	Appreciate the solar thermal energy applications.				
22ETC15B/	CO3	Discuss the PV technology and Industry.				
22ETC15B/ 25B	CO4	Identify the components of PV system and Inverters.				
	CO5	Understand the installation of PV system and O&M of PV systems				

RENEWABLE ENERGY SOURCES						
Course Code:	22ETC15C/25C	CIE Marks	50			
Course Type	Theory	SEE Marks	50			
(Theory/Practical/Integrated )		Total Marks	100			
Teaching Hours/Week (L:T:P: S)	3:0:0:0	Exam Hours	03			
Total Hours of Pedagogy	40 hours	Credits	03			
	Module-1 (08 hours)	)				

**Introduction: INTRODUCTION:** Principles of renewable energy and there types. energy and sustainable development,– Environmental Aspects of Energy Utilization– Renewable Energy Scenario in India and around the World and Potentials – Achievements / Applications

Module-2 (08 hours)
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**SOLAR ENERGY:** Solar Radiation – Measurements of Solar Radiation - Flat Plate and Concentrating Collectors - Fundamentals of Solar Photo Voltaic Conversion – Solar PV Power Generation – Solar energy Applications

Module-3 (08 hours)

**WIND ENERGY:** Wind Data and Energy Estimation – Wind Energy Conversion Systems – Performance – Site Selection— Safety and Environmental Aspects.

**BIOMASS ENERGY:** Introduction; Photosynthesis Process; Biofuels; Biomass Resources; Biomass conversion technologies-fixed dome and floating type; Urban waste to energy conversion. Biomass Applications.

Module-4 (08 hours)

**Tidal Power:** Tides and waves as energy suppliers and their mechanics; fundamental characteristics of tidal power, harnessing tidal energy, advantages and limitations.

Ocean Thermal Energy Conversion: Principle of working, OTEC power stations in the world, advantages and disadvantage with OTEC.

Module-5 (08 hours)

**Green Energy:** Introduction, Fuel cells: Classification of fuel cells  $- H_2$ ; Operating principles, Zero energy Concepts. Benefits of hydrogen energy, hydrogen production technologies (electrolysis method only), hydrogen energy storage, applications of hydrogen energy, problem associated with hydrogen energy.

Geothermal Energy. Introduction-, geothermal filed and its applications. Small Hydro-power generation.

### Course outcome (Course Skill Set)

At the end of the course the student will be able to:

CO1	Describe the environmental aspects of renewable energy resources. In Comparison with various
	conventional energy systems, their prospects and limitations.
CO2	Describe the use of solar energy and the various components used in the energy production with respect to applications like-heating, cooling, desalination, power generation.
CO3	Understand the conversion principles of wind and tidal energy
CO4	Understand the concept of biomass energy resources and green energy.

CO5 Acquire the basic knowledge of ocean thermal energy conversion and hydrogen energy.

# Suggested Learning Resources:

**Text Books:** 

1. Nonconventional Energy sources, G D Rai, Khanna Publication, Fourth Edition,

2. Energy Technology, S.Rao and Dr. B.B. Parulekar, Khanna Publication.Solar energy, Subhas P Sukhatme, Tata McGraw Hill, 2<sup>nd</sup> Edition,1996.

### **Reference Books:**

- 1. Principles of Energy conversion, A. W. Culp Jr.,, McGraw Hill, 1996
- 2. Non-Convention EnergyResources, Shobh Nath Singh, Pearson, 2018

		Introduction to Internet of Things(IC	DT)	
S	ubject code	22ETC15D/25D	Credit: 0	3
Н	lours/Week:	3 hours. (Theory)	SEE: 50 Marks	3
То	tal hours: 40	CIE: 50 Marks	SEE: 3 hours	
		MODULES		TeachingHour
		Module-I		
		on, Network Types, Layered network models		
Emergenc	e of IoT: Introduction	, Evolution of IoT, Enabling IoT and the	Complex Interdependence	8 hours
	ogies, IoT Networking C			
Textbook 1:	Chapter 1- 1.1 to 1.3 Ch			
		Module-II		
		oduction, Sensors, Sensor Characteristics, Se		
		tions, Actuators, Actuator Types, Actuator Ch	naracteristics.	8 hours
Textbook 1:	Chapter $5 - 5.1$ to $5.9$			
		Module-III		
		ypes: Data Format, Importance of Processing		0.1
1 0		d Selection Considerations, Processing Offloa	adıng.	8 hours
Textbook I:	Chapter $6 - 6.1$ to $6.5$			
		Module -IV		
	TED IOT TECHNOLO		Agreement in Cloud	8 hours
		Virtualization, Cloud Models, Service-Level	Agreement in Cloud	8 nours
	g, Cloud Implementation	, Sensor-Cloud: Sensors-as-a-Service.		
	al IoT – Introduction and	Case Studies		
		6; Chapter 12- 12.1-12.2		
TEALOOK I.	Chapter 10- 10.1 to 10.0	Module-V		
IOT CASE	E STUDIES AND FUTU			
	IoT – Introduction			8 hours
	IoT – Introduction,			
	esIoT Analytics			
Introductio				
Textbook	1: Chapter 13–13.1;			
	- 14.1-14.2; Chapter 17-			
17.1	_			
Text book	•			
1. Sudij	o Misra, Anandarup Mul	cherjee, Arijit Roy, "Introduction to IoT", Car	nbridge University Press 202	21.
	rence:			
Reference	e books:			
1. S. M	isra, C. Roy, and A. M	ukherjee, 2020. Introduction to Industrial Int	ternet of Things and Indust	ry 4.0.CRC
Press		-	-	
2. Vijay	Madisetti and Arshdeer	b Bahga, "Internet of Things (A Hands-on-Ap	proach)",1st Edition, VPT, 2	2014.
3. Franc	cis daCosta. "Rethinkin	g the Internet of Things: A Scalable Appro	ach to Connecting Everyth	ing". 1st Edition
	ss Publications, 2013.			8,
	come (Course Skill Set	)		
	of the course the studen			
C01		of IoT, IoT networking components, and addr	ressing strategies in IoT.	
		g devices and actuator types.		
CO2	Classify various sensifi			
CO2 CO3				
	Demonstrate the proces Explain Associated IO	ssing in IoT.		

	Introduction to Cyber Security	¥	
Subject code	22ETC15E/25E	Credit: 0	03
Hours/Week:	3 hours. (Theory)	SEE: 50 Marks	8
Total hours: 40	CIE: 50 Marks	SEE: 3 hours	
Prerequisite: Nil			
Course objectives			
	terminologies and perspectives		
• To understand Cyber Offe			
6	ls and methods used in cybercrimes		
To understand phishing ar			T
	MODULES		TeachingHours
	Module-I		
	gins of the Word, Cybercrime and Inform		
	f Cybercrimes, An Indian Perspective, Ha	acking and Indian Laws.,	8 hours
Global Perspectives			
Textbook:1 Chapter 1 (1.1 to 1.5,			
Calkan Offenses	Module-II		
Cyber Offenses:	advation How animinals plan the attacks	Social Engineering Cyler	Q hours
Stalking, Cybercaafe & cybercrime	oduction, How criminals plan the attacks	, Social Engineering, Cyber	8 hours
	s. Attack Vector.Textbook:1 Chapter 2 (2.1 to	27)	
<b>Dotnets.</b> The fuel for cyberefine, 7	Module-III	2.1)	
Tools and Methods used in C	ybercrime: Introduction, Proxy Servers,	Anonymizers Phishing	
	and Spyways, Virus and Worms, Trozer		8 hours
	ttackes, Attacks on Wireless networks.	in Horses and Duckdoors,	0 nouis
Textbook:1 Chapter 4 (4.1 to 4.9, 4			
• • • • • • • • • • • • • • • • • • • •	Module -IV		
Phishing and Identity Theft: In	ntroduction, methods of phishing, phishin	ng, phising techniques, spear	
phishing, types of phishing scams,	phishing toolkits and spy phishing, counter	measures, Identity Theft	8 hours
Textbook:1 Chapter 5 (5.1. to 5.3)			
	Module-V		
	sics: Introdcution, Historical Background		
	tter Foresics, Cyber Forensics and Digital	Evidence, Digital Forensic	8 hours
Life cycle, Chain of Custody Conc	-		
Textbook:1 Chapter 7 (7.1. to 7.5, '	7.7 to 7.9)		
Text book:			4 17 1
	bole, "Cyber Security: Understanding Cybe		s AndLegal
	t Ltd, ISBN: 978-81- 265-21791, 2011, Firs	st Edition (Reprinted 2018)	
Reference books:	\ \		
Course outcome (Course Skill Set	·		
At the end of the course the studen <b>CO1</b> Explain the cybercrime			]
CO2 Describe Cyber offense	<u> </u>		
	thods used on Cybercrime		
CO3 Industrate Tools and Me CO4 Explain Phishing and I			
CO5 Justify the need of com			
Justify the need of com			]

	WASTE MANAGEMENT		
Subject code	22ETC15F/22ETC25F	Credit: 03	3
Hours/Week:	3 hours. (Theory)	SEE: 50 Marks	
Total hours: 42	CIE: 50 Marks	SEE: 3 hours	
	MODULES		Teaching Hours
Definition of waste, classification of waste Extent of generation in India, storage, trar			9 hours
Solid waste definition, necessity of safe transportation, separation recycling and re		acteristics, collection and	9 hours
Hazardous waste definition, classificatio waste health effect of waste managements		pt in waste management	8 hours
E-waste definition, classification, health e Biomedical waste: health effects, classific		cineration	8 hours
Waste treatment, bioremediation, compo applications merits and demerits	<b>Module-V</b> osting, land farming, bio piles, biogas	plant, phytoremediation:	8 hours
<ul><li>Cext book:</li><li>1. Environmental Engineering vol-II</li><li>2. Soil Pollution By J.C.Calvet, CBS</li></ul>			
Reference books: Introduction to Environmental Engineering	by Mackenzie L.Davis.		

# Programming Languages Courses (PLC I &II)

Course Code: Course Type Integrated ) Feaching Hor Fotal Hours of		Veb Programming 22PLC15A/22PLC25A	CIE Marks	50			
Integrated ) Feaching Hor		Integrated	SEE Marks	50			
Feaching Ho	(Theory/Flactical	Integrated	Total Marks	100			
0	urs/Week (L:T:P: S)	2:0:2	Exam Hours	03			
	· · · · · · · · · · · · · · · · · · ·	40 hours	Credits	03			
	n i cuagogy	MODULES	Creans	Teaching			
				Hours			
HTML and X)HTML D	XHTML: Version Hist	<b>Module-I</b> First Look at HTML and XHTML, Hello Fory, HTML and XHTML DTDs: The wsers and (X)HTML, The Rules of (X) wo Paths?	Specifications Up Close,	6 hours			
Markup, Pres Semantics, H	ello HTML5, Loose Syn sentational Markup Remo ITML5's Open Media Ef ements and Attributes to S	<b>Todule-II</b> Itax Returns, XHTML5, HTML5: Embra oved and Redefined, HTML5 Document S fort, Client-Side Graphics with <canvas> Support Web Applications</canvas>	Structure Changes, Adding	6 hours			
and the Univ Cascading, survey Values for Co neight Prope	tyle Sheets (CSS) : Intro rersal Selector, CSS Synt tyle Attribute, style Con olor, Opacity Values for	odule-III oduction, CSS Overview, CSS Rules, Ex cax and Style, Class Selectors, ID Selector tainer, External CSS Files, CSS Properti Color, HSL and HSLA Values for Co rder Properties, Element Box, padding P ty's Core Area.	ors, span and div Elements, ies, Color Properties, RGB blor, Font Properties, line-	6 hours			
Positioning I	Images, Shortcut Icon, ifr to JavaScript: Function	Module-V ons, DOM, Forms, and Event Handler	rs : History of JavaScript,				
Document O	bject Model, Forms an	nctions, Variables, Identifiers, Assignmen d How They're Processed: Client-Side essing a Form's Control Values, reset and f	Versus Server-Side, form	6 hours			
	ome (Course Skill Set) f the course the student w	ill be able to:					
and the one of		ntext and justification for HTML over XH	TML				
CO1		ents and adding various semantic markup					
	CO3     Analyse various attributes, values and types of CSS						
CO2		ts and event handling mechanisms of Java	Script.				
CO2 CO3							
CO2 CO3		List of Duognama 22ESC145/2	15				
CO2 CO3 CO4	•	List of Programs – 22ESC145/24	45				
CO2 CO3 CO4 Programmir	ng Assignments:		45				
CO2 CO3 CO4 Programmin 1. Crea	ng Assignments: ate an XHTML page using	g tags to accomplish the following:					
CO2 CO3 CO4 Programmin 1. Crea (i)	ng Assignments: ate an XHTML page using A paragraph contain						
CO2 CO3 CO4 Programmin 1. Crea	ng Assignments: ate an XHTML page using	g tags to accomplish the following:					
CO2 CO3 CO4 Programmin 1. Crea (i)	ng Assignments: ate an XHTML page using A paragraph contain	g tags to accomplish the following:					

2. Create following table using XHTML tags. Properly align cells, give suitable cell padding and cell spacing, and

apply background color, bold and emphasis necessary

		SubjectA
	Sem1	SubjectB
		SubjectC
		SubjectE
Domontry on t	Sem2	SubjectF
Department		SubjectG
		SubjectH
	Sem3	SubjectI
		SubjectJ

3. Use HTML5 for performing following tasks:

- (i) Draw a square using HTML5 SVG, fill the square with green color and make 6px brown stroke width
- (ii) Write the following mathematical expression by using HTML5 MathML.  $d=x^2-y^2$
- (iii) Redirecting current page to another page after 5 seconds using HTML5 meta tag
- 4. Demonstrate the following HTML5 Semantic tags- <article>, <aside>, <details>, <figcaption>, <figure>, <footer>, <header>, <main>, <mark>, <section> for a webpage that gives information about travel experience.
- 5. Create a class called **income**, and make it a background color of #0ff. Create a class called **expenses**, and make it a background color of #f0f. Create a class called **profit**, and make it a background color of #f0f.

Throughout the document, any text that mentions income, expenses, or profit, attach the appropriate class to that piece of text. Further create following line of text in the same document:

The current price is 50₹ and new price is 40₹

- 6. Change the tag **li** to have the following properties:
  - A display status of inline
  - A medium, double-lined, black border
  - No list style type

Add the following properties to the style for li:

- Margin of 5px
- Padding of 10px to the top, 20px to the right, 10px to the bottom, and 20px to the left Also demonstrate list style type with user defined image logos
- 7. Create following web page using HTML and CSS with tabular layout

Sign up toda	ay
Name:	
E-mail:	
Password:	
Oran firmer and a second second	
Confirm password:	

8. Create following calculator interface with HTML and CSS

- Write a Java Script program that on small delay
- 9. Create a webpage containing 3 overlapping images using HTML, CSS and JS. Further when the mouse is over any image, it should be on the top and fully displayed.

Course outcome (Course Skill Set)		7	8	9	X	
At the end of the course the student will be a	bl	e to:				
Suggested Learning Resources:		4	5	6		
Books (Title of the Book/Name of the auth	or	/Nam	e of tl	ie pub	lisher/	Edition and Year)
TextBook-1: HTML & CSS: The Complet	e I	Refer	en <b>∂</b> e T	hôma	as A. Po	well, , Fifth Edition, Tata McGraw Hill,
TextBook-2: WEB PROGRAMMING w	vit	h HT	ML5,	CSS	and Ja	vaScript, John Dean, Jones & Bartlett Learning,
First Edition		0	•	1	=	

Course Title: Course Code:		thon Programming 22PLC15B/25B	CIE Marks	50
Course Type (The	ory/Practical	Integrated	SEE Marks	50
/Integrated )	J		Total Marks	100
Teaching Hours/W	veek (L:T:P: S)	2:0:2	Exam Hours	03
Total Hours of Peo		40 hours	Credits	03
	0.05	MODULES		Hour
		Module-I		
Types, String Co Your Program, <b>H</b> and Comparison Importing Modu Return Values an	ncatenation and Rep low control: Boolea Operators, Elemen es,Ending a Program d return Statements	into the Interactive Shell, The Integolication, Storing Values in Variable an Values, Comparison Operators, I ts of Flow Control, Program Exe m Early with sys.exit(), <b>Functions</b> ,The None Value, Keyword Argum on Handling, A Short Program: Gues	es, Your First Program, Dissectin Boolean Operators, Mixing Boolea ecution, Flow Control Statement et def Statements with Parameter nents and print(), Local and Globa	eg 6 hours s, s,
Program: Magic 8	ata Type, Working w Ball with a List, Lis Structuring Data: 7	dule-II Fith Lists, Augmented Assignment Op st-like Types: Strings and Tuples, Re The Dictionary Data Type, Pretty Pri	ferences,	6 hours
		odule-III		
Adding Bullets to <b>Reading and Wr</b> Saving Variables	Wiki Markup iting Files: Files and	a Strings, Useful String Methods, I d File Paths, The os.path Module, Module,Saving Variables with the : Multiclipboard,	The File Reading/Writing Process	s, hours
		Module -IV		
Project: Renamir into a ZIP File,	g Files with Americ	, Walking a Directory Tree, Compre an-Style Dates to European-Style D ing the Traceback as a String, Assert	Dates, Project: Backing Up a Folde	er 6 hours
		Module-V		
	-	fined types, Attributes, Rectangles,	Instances as return values, Object	
Classes and me	tions: Time, Pure fu thods: Object-orient method, The_str_	nctions, Modifiers, Prototyping verse ted features, Printing objects, Anot method, Operator overloading, Typ	her example, A more complicate	
Course outcome (				l
	course the student wil	ll be able to:		
		n handling loops and creation of fund	ctions.	
		eate and manipulate lists, tuples and		
		ng processing and file organization		
	lop programs for exc			
		s of Object-Oriented Programming ir	n Python.	
	· ·	List of Programs – 22PLC1	•	
Programming Ex	ercises:	<u> </u>		
total marks an b. Develop a p	d percentage with sui	lent details like Name, USN, and Ma itable messages. ame and year of birth of a person. Di		
b. Write a fun R).	ction to calculate fact	oonacci sequence of length (N). Read torial of a number. Develop a progra	m to compute binomial coefficient	
3. Read N numb with suitable r		and create a list. Develop a program	to print mean, variance and standa	rd deviation
		s) from the console. Develop a progr	iom to mint the framework of the	1: -: +: +1

- 5. Develop a program to print 10 most frequently appearing words in a text file. [Hint: Use dictionary with distinct words and their frequency of occurrences. Sort the dictionary in the reverse order of frequency and display dictionary slice of first 10 items
- 6. Develop a program to sort the contents of a text file and write the sorted contents into a separate text file. [Hint: Use string methods strip(), len(), list methods sort(), append(), and file methods open(), readlines(), and write()].
- 7. Develop a program to backing Up a given Folder (Folder in a current working directory) into a ZIP File by using relevant modules and suitable methods.
- 8. Write a function named DivExp which takes TWO parameters a, b and returns a value c (c=a/b). Write suitable assertion for a>0 in function DivExp and raise an exception for when b=0. Develop a suitable program which reads two values from the console and calls a function DivExp.
- 9. Define a function which takes TWO objects representing complex numbers and returns new complex number with a addition of two complex numbers. Define a suitable class 'Complex' to represent the complex number. Develop a program to read N (N  $\geq$ 2) complex numbers and to compute the addition of N complex numbers.
- 10. Develop a program that uses class Student which prompts the user to enter marks in three subjects and calculates total marks, percentage and displays the score card details. [Hint: Use list to store the marks in three subjects and total marks. Use init () method to initialize name, USN and the lists to store marks and total, Use getMarks() method to read marks into the list, and display() method to display the score card details.]

#### Course outcome (Course Skill Set)

At the end of the course the student will be able to:

The the end of the course the student will be dole to.		
CO1	Demonstrate proficiency in handling loops and creation of functions.	
CO2	Identify the methods to create and manipulate lists, tuples and dictionaries.	
CO3	Develop programs for string processing and file organization	
CO4	Interpret the concepts of Object-Oriented Programming as used in Python.	

# **Suggested Learning Resources:**

**Text Books** 

1. Al Sweigart, "Automate the Boring Stuff with Python", 1<sup>st</sup>Edition, No Starch Press, 2015. (Available under CC-BY-NC-SA license at https://automatetheboringstuff.com/)

(Chapters 1 to 18, except 12) for lambda functions use this link: https://www.learnbyexample.org/python-lambda-function/

2. Allen B. Downey, **"Think Python: How to Think Like a Computer Scientist"**, 2<sup>nd</sup> Edition, Green Tea Press, 2015. (Available under CC-BY-NC license at http://greenteapress.com/thinkpython2/thinkpython2.pdf

(Chapters 13, 15, 16, 17, 18) (Download pdf/html files from the above link)

Course Title:	Basics of Java Progra	mming		
Course Code:		22PLC15C/22PLC25C	CIE Marks	50
Course Type (Theory/Practical		Integrated	SEE Marks	50
/Integrated )	-		Total Marks	100
Teaching Hours/V	Week (L:T:P: S)	2:0:2	Exam Hours	03
Total Hours of Pe		40 hours	Credits	03
		MODULES	· · ·	Hours
		Module-I		
Two Control St Variables, and A Types, Characte	atements, Using Blocks Arrays: Java Is a Strongly ers, Booleans, A Closer	Programming, A First Simple Program, A Sec of Code, Lexical Issues, The Java Class Lil y Typed Language, The Primitive Types, Inte c Look at Literals, Variables, Type Conve s, Arrays, A Few Words About Strings	praries, Data Types, egers, Floating-Point	6 hours
Assignment Operat		ise Operators, Relational Operators, Boolean I ator Precedence, Using Parentheses, Control S		6 hours
Introducing Meth Class, A Closer L Look at Argume	hods, Constructors, The t Look at Methods and Cla	<b>le-III</b> sals, Declaring Objects, Assigning Object F his Keyword, Garbage Collection, The finalize sses: Overloading Methods, Using Objects as fects, Recursion, Introducing Access Control, U	e() Method, A Stack Parameters, A Closer	6 hours
		<b>Module -IV</b> Creating a Multilevel Hierarchy, When Cons spatch, Using Abstract Classes, Using final w		6 hours
		Module-V		
Packages and Interfaces: Packages, Access Protection, Importing Packages, Interfaces, Exception Handling: Exception-Handling Fundamentals, Exception Types, Uncaught Exceptions, Using try and catch, Multiple catch Clauses, Nested try Statements, throw, throws, finally, Java''s Built-in Exceptions, Creating Your Own Exception Subclasses, Chained Exceptions, Using Exceptions.			6 hours	
Course outcome	(Course Skill Set)			
	course the student will be	e able to:		
	llustrate basics of JAVA			
	lemonstrate working of a			
	create classes and objects			
		based on polymorphism and inheritance		
		nporting packages and exception handling me	chanism	
<u> </u>	•	List of Programs – 22PLC15B/25B		
quadratio 2. Write a J	AVA program that prints c formula. AVA program for multip	s all real solutions to the quadratic equation ax		

4. Write a JAVA program to sort list of elements in ascending and descending order

5. Create a JAVA class called Student with the following details as variables within it.

USN NAME	
BRANCH	
PHONE	

# PERCENTAGE

Write a JAVA program to create n Student objects and print the USN, Name, Branch, Phone, and percentage of these objects with suitable headings.

- 6. Write a JAVA program demonstrating Method overloading and Constructor overloading.
- 7. Design a super class called Staff with details as StaffId, Name, Phone, Salary. Extend this class by writing three subclasses namely Teaching (domain, publications), Technical (skills), and Contract (period). Write a JAVA program to read and display at least 3 staff objects of all three categories.
- 8. Demonstrate dynamic dispatch using abstract class in JAVA.
- 9. Create two packages P1 and P2. In package P1, create class A, class B inherited from A, class C. In package P2, create class D inherited from class A in package P1 and class E. Demonstrate working of access modifiers (private, public, protected, default) in all these classes using JAVA.
- 10. Write a JAVA program to read two integers a and b. Compute a/b and print, when b is not zero. Raise an exception when b is equal to zero. Also demonstrate working of ArrayIndex Out OfBoundException.

### Suggested Learning Resources:

**Books (Title of the Book/Name of the author/Name of the publisher/Edition and Year)** 1. Herbert Schildt, Java The Complete Reference, 7th Edition, Tata McGraw Hill, 2007.

Course Title: Introducti	on to C++ Programming		
Course Code:	22PLC15D/22PLC25D	CIE Marks	50
Course Type (Theory/Practical	Integrated	SEE Marks	50
/Integrated )		Total Marks	100
Teaching Hours/Week (L:T:P:	S) 2:0:2	Exam Hours	03
Total Hours of Pedagogy	40 hours	Credits	03
10001100015 01100008085	MODULES	creates	Hours
	Module-I		
C++ Program -Basic C++ synta	l Programming: Computer programming back ax, Object Oriented Programming: What is an psulation, inheritance, abstract classes, polymo	object, Classes, methods and	6 hours
operator - Expressions and the	Module-II eywords – Identifiers and constants – Operato ir types – Special assignment expressions – Fu e – Inline functions -Default arguments – Funct	unction prototyping – Call by	6 hours
Derived classes, Single Inherita	Module-III Derived class Constructors, destructors-Types of <u>unce, Multiple, Hierarchical Inheritance, Hybrid</u> Module -IV chy- File Stream-Text File Handling- Binary F	d Inheritance.	6 hours
operations.			6 hours
Throw statement- Pre-defined		ling- Try and catch block	6 hours
Course outcome (Course Skill			
At the end of the course the stu			
	d and design the solution to a problem using of		ncepts.
Overloading.	ode with extensible Class types, User-defined	-	
	sability and extensibility by means of Inheritan		
	ures of C++ including file stream and file hand	lling	
CO5 Demonstrate excep	tion handling in C++		
	List of Programs – 22PLC15D/22	PLC25D	
Programming Assignments	S:		
1. Write a C++ program to so	rt the elements in ascending and descending or	rder.	
2. Write a C++ program to fin	nd the sum of all the natural numbers from 1 to	o n.	
	vap 2 values by writing a function that uses cal		
	emonstrate function overloading for the follow		
add(int a, int b) add(double a, double b)		0 r0 r	
5. Create a class named Shi inheriting the Shape class w Rectangle and Triangle havin respectively. Again, make	ape with a function that prints "This is a shift the same function that prints "Polygon is and the same function which prints "Rectangle another class named Square having the se function by the object of each of these classes	s a shape". Create two other c e is a polygon" and "Triangle is same function which prints '	lasses named is a polygon"
6.Suppose we have three c FourWheeler is derived from 'vehicle' that prints 'I am a ve class Car has a method 'car' t other classes methods from corresponding outputs of the	lasses Vehicle, FourWheeler, and Car. The it and the class Car is derived from the class chicle', class FourWheeler has a method 'fourW hat prints 'I am a car'. So, as this is a multi-lew the object of the class Car. We invoke all the	class Vehicle is the base cla s FourWheeler. Class Vehicle Wheeler' that prints 'I have four vel inheritance; we can have ac- ne methods from a Car object	has a method wheels', and cess to all the
I have four wheels I			
am a vehicle			
	strate multilevel inheritance using this.		
	ate a text file, check file created or not, if creat	ed it will write some text into th	e file and then

8.Write a C++ program to write and read time in/from binary file using fstream

9. Write a function which throws a division by zero exception and catch it in catch block. Write a C++ program to demonstrate usage of try, catch and throw to handle exception.

10. Write a C++ program function which handles array of bounds exception using C++.

Suggested Learning Resources: Books (Title of the Book/Name of the author/Name of the publisher/Edition and Year) Textbooks

1. Bhushan Trivedi, "Programming with ANSI C++", Oxford Press, Second Edition, 2012.

Balagurusamy E, Object Oriented Programming with C++, Tata McGraw Hill Education Pvt.Ltd , Fourth Edition 2010.

Subject Code: 22PLC25E	Credit:3	CIE:50	
Number of Lecture Hours/Week	02	SEE:50	
Total Number of Lecture Hours	30	SEE Hours: 03	
	MODULES		Hours
	Module-I		
Introduction to pointers: The & and * addresses to functions, Functions returning		ssions, Jargon of Pointers, passing	
Pointers and arrays: Passing array element a function, Pointers and 2-D arrays, point pointers, pointers to functions, argc and a arguments.	er to an array, passing 2D	array to a function. problems., File	06 Hrs
	Module-II		
<ul><li>Array of pointers, Dynamic Memory allocation, problems, Pointers and Strings: pointers and strings, const qualifier, 2D array of characters, array of pointers to strings, Limitation of array of pointers to strings. Problems.</li><li>Pointers and Structures: Array of structures, structure pointers, offsets of Structure Elements. problems.</li></ul>			06 Hrs
	Module-III		
Architecture of Unix, Features of Unix, uname, who, date, stty, pwd, cd, mkdin ownership, file permissions, chmod, Direc	r, rmdir, ls, cp, mv, rm	, cat, more, wc, lp, ls-l, ls-d, file	06 Hrs
	Module-IV		
Process basics, ps, process creation and Inodes, Hard link, symbolic links and ln, grep. System administration, administrato and shutdown, managing Disk space ,De systems and types, creating partitions and	The Directory, umask, fi rs privileges, maintaining vice files, cpio, tar, parti	nd, Filters- cut, paste, sort, uniq, tr, g security, user management, startup tions and file systems, standard file	06Hrs
	Module V		06 Hrs
Shell programming: shell's interpretive of pipes, tee, command substitution, shell va case, expr, while ,for, set, shift.	• · · ·	1 0 2 0	
Text Books:			
1. Understanding Pointers in C, Yashwant	Kanetkar, 3 <sup>rd</sup> Edition, B	PB Publisher	
2.Unix concepts and applications, Sumital	oha Das, 4 <sup>th</sup> edition, Mcgr	raw Hill Education	
Reference Books:			
1. C Programming – A Modern Approach and Shell programming, Dehrouza A Forc			
CO1 Apply pointers in expressions, funct	ions and arravs.		
11 v 1 ································			

	te dynamic memory allocation, array of pointers , pointers to strings and structures.	
CO3 Demonstr	rate architecture of unix, unix commands related to files and directories	
CO4 Demonsti	rate lifecycle of Process, system administration and related commands.	
CO5 Develop s	simple shell scripts and demonstrate pattern matching.	
List of Program	nmes	
1.	Write a C program to demonstrate declaration and initialization of pointers.	
2.	Write a c program to perform pointers arithmetic. i.e. pointer addition ,subtraction,	
	multiplication, division, auto increment and decrement.	
3.	WAP to swap two numbers using pointers.	
4.	WAP to read values in 1D-array:	
i)	Pass entire array 1D to a function and display the same.	
ii)	Return 1D-array from a function.	
5.	WAP to read values in 2D-array, Pass entire 2D-array to a function and display the same.	
6.	WAP to demonstrate pointers to an array.	
7.	WAP to read a string from the keyboard, pass entire string to a function and display the	
	same.	
8.	WAP to demonstrate dynamic memory allocation of variables, arrays and structures	
9.	WAP to create structure, read structure elements, pass entire structure to a function and	
	return the structure from function.	
10.	WAP to demonstrate pointers to structures.	
11.	WAP to demonstrate pointers to functions.	
12.	Display date and time in the format dd-mm-yy / hh:mm:ss?	
13.	Demonstrate the working of the following command.	
i)	mkdir ii) cat iii) cp iv) rm v) mv.	
14.	Demonstrate the working of tee, pipe and command substitution.	
15.	Demonstrate the working of at and batch commands.	
16.	Demonstrate the working of cut, sort, paste on file.	
17.	Demonstrate the working of grep to locate the pattern in a file.	
18.	Write a shell script that accepts two directory names bar1 and bar2 and delete the files	
	from bar2 that are identical in bar1.	
19.	Demonstrate cpio to backup and restore files.	
20.	Write a script to take two number as arguments and output their sum using	
	i) bc ii) expr.	
21.	Write a shell script to read n numbers and find sum of even and odd numbers and display	
	them separately.	
22.	Demonstrate embedding shell script in C Programming.	