NAGARJUNA

COLLEGE OF ENGINEERING & TECHNOLOGY

An Autonomous Institute under VTU

Vision

Leadership and Excellence in Education

Mission

To fulfill the vision by imparting total quality education replete with the philosophy of blending human values and academic professionalism**.**

Scheme and Syllabus

2nd Semester B.E

Physics Cycle

Academic Year

2022-23

Physics Cycle – CSE Stream

Second Semester Physics Cycle CSE Stream

Sl.No	Course & Course code		Course Title	TD /PSB	Teaching Hours/week				Examination				Credits
					Theory Lecture	Tutorial	Practical/Drawing	SDA	Duration in hours	CIE Marks	SEE Marks	Total Marks	
					L	T	P	S					
1	*ASC(IC)	22MATS21	Advanced Calculus and Numerical methods for CSE	Mathematics	2	2	2	0	03	50	50	100	04
2	#ASC(IC)	22PHYS22	Applied Physics for CSE	Physics	2	2	2	0	03	50	50	100	04
3	ESC	22POP23	Principles of Programming using C	CSE	2	0	2	0	03	50	50	100	03
4	ESC-1	22ESC241	Introduction to Civil Engineering	CV	3	0	0	0	03	50	50	100	03
	OR												
	ESC-1	22ESC244	Introduction to Mechanical Engineering	ME	3	0	0	0	03				
5	ETC-1	22ETC251	Introduction to Cyber Security	CSE	3	0	0	0	03	50	50	100	03
6	AEC	22ENG26	Professional Writing Skills in English	Humanities	1	0	0	0	01	50	50	100	01
7	HSMC	22KSK27	Samskrutika Kannada	Humanities	1	0	0	0	01	50	50	100	01
		22KBK27	Balake Kannada										
8	AEC	22IDT28	Innovation and Design Thinking	Any Dept.	1	0	0	0	01	50	50	100	01
				TOTAL						**400**	**400**	**800**	**20**

SDA-Skill development Activities, **TD/PSB** – Teaching Department / Paper setting board, **ASC**-Applied Science course, **ESC**-Engineering Science Course, **ETC**-Emerging Technology Course, **AEC**-Ability Enhancement Course, **HSMS** – Humanity and Social Science and management Course, **SDC**-Skill development Course, **CIE-**Continous Internal Evaluation, **SEE**-Semester and Examination**, IC**-Integrated Course (Theory Course Integrated with Practical Course)

Course Title	**ADVANCED CALCULUS AND NUMERICAL METHODS For Computer Science and Engineering Stream.**			
Course Code	**22MATS21**		**CIE Marks**	**50**
Course Type	**Integrated**		**SEE Marks**	**50**
Teaching Hours/Week (L: T: P: S)	**2:2:2:0**		**Total Marks**	**100**
Total Hours of Pedagogy	**Theory**	**40 hours**	**Exam Hours**	**03**
	Practical	**10 to 12 slots**	**Credits**	**04**

Course objectives:

The goal of the course Advanced Calculus and Numerical Methods (22MATS21) is to,

- Familiarize the students with a concrete foundation of vector calculus.
- Acquire the knowledge of numerical methods enabling them to develop the software in Computer Science and Engineering.
- Facilitate with the higher order linear differential equations and analyze the applications of Partial Differential Equations in Computer Science and Engineering.

Teaching-Learning Process (General Instructions).

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

1. In addition to the traditional lecture method, different types of innovative teaching methods may be adopted so that the delivered lessons shall develop students theoretical and applied mathematical skills.
2. State the need for Mathematics with Engineering Studies and Provide real-life examples.
3. Support and guide the students for self–study.
4. You will also be responsible for assigning homework, grading assignments and quizzes, and documenting students' progress.
5. Encourage the students for group learning to improve their creative and analytical skills.
6. Show short related video lectures in the following ways:
   - As an introduction to new topics (pre-lecture activity).
   - As a revision of topics (post-lecture activity).
   - As additional examples (post-lecture activity).
   - As an additional material of challenging topics (pre-and post-lecture activity).
   - As a model solution of some exercises (post-lecture activity).

Module-1 **08 Hours.**

Vector Calculus:

Introduction to Vector Calculus in Computer Science and Engineering applications.

Vector Differentiation: Scalar and vector fields. Gradient, directional derivative, curl and divergence – physical interpretation, solenoidal and irrotational vector fields. Problems.

Vector Integration: Line integrals, Applications to work done by a force. Definition of surface integral. Statement of Green's theorem and Stoke's theorem. Problems.

[Text 1: 8.4, 8.5, 8.6, 8.7, 8.11, 8.13, 8.14]

[RBT Levels: L1, L2 and L3]

Self-Study: Volume integral and Gauss divergence theorem.

Applications: Computer graphics, Computer vision, Flight simulation, Data structure and Machine learning project.

Module-2	08 Hours.
Numerical methods I: **Importance of numerical methods in the field of Computer Science and Engineering.** **Solution of algebraic and transcendental equations:** Regula-Falsi and Newton-Raphson methods (only formulae). Problems. **Interpolation:** Finite differences, Interpolation using Newton's forward and backward difference formulae and Lagrange's interpolation formula (All formulae without proof). Problems. N**umerical integration**: Trapezoidal, Simpson's $(1/3)^{rd}$ and $(3/8)^{th}$ rules (without proof). Problems. **[Text 1: 28.1, 28.2, 29.1, 29.6, 29.10, 30.4, 30.6, 30.7. 30.8]** **[RBT Levels: L1, L2 and L3]** **Self-Study:** Bisection method and Lagrange's inverse Interpolation**.** **Applications:** Estimating the approximate roots, extremum values, Area, volume, surface area. Errors in finite precision. Scientific computing, machine learning, computer graphics and Robatics.	
Module-3	**08 Hours.**
Numerical methods II: **Introduction to various numerical techniques for handling Computer Science and Engineering applications.** **Numerical solution of ordinarydifferential equations(ODE's) of first order and first degree:** Taylor's series method, Modified Euler'smethod, Runge-Kutta method of fourth order and Milne's predictor-corrector formula (No derivations of formulae). Problems. **[Text 1: 32.1, 32.3, 32.5, 32.7, 32.9]** **[RBT Levels: L1, L2 and L3]** **Self-Study:** Adam-Bashforth method. **Applications:** Finding approximate solutions to ODE . computer graphics, computer vision, machine learning.	
Module-4	**08 Hours.**
Differential equations of higher order: **Importance of higher-order ordinary differential equations in Computer Science and Engineering applications.** **Higher-order linear ODE's with constant coefficients** : Inverse differential operator (Particular integral for e^{ax}, sin ax, cos ax, x^m only), method of variation of parameters, Cauchy's and Legendre's homogeneous differential equations. Problems. **[Text 1: 13.1, 13.2, 13.3, 13.4, 13.5, 13.6, 13.8, 13.9]** **[RBT Levels: L1, L2 and L3]** **Self-Study:** Finding the solution by the method of undetermined coefficients. Analysis of electrical circuit problems. **Applications:** Creating software's, creating games, constraint logic programming, Artificial Intelligence and Net working.	
Module-5	**08 Hours.**
Partial Differential Equations(PDE's): **Importance of partial differential equations for Computer Science and Engineering application.** Formation of PDE's by elimination of arbitrary constants and functions. Solution of non-homogeneous PDE by direct integration. Homogeneous PDEs involving derivative with respect to one independent variable only. Solution of PDE by method of separation of variables. Solution of one-dimensional heat equation and wave equation by the method of separation of variables. **[Text 1: 17.1, 17.2, 17.3, 17.4, 18.2, 18.4, 18.5]** **[RBT Levels: L1, L2 and L3]** **Self Study**: Derivation of one-dimensional heat equation and wave equation. **Applications**: Computer graphics, Machine learning, Image processing and Robotics.	
Teaching-Learning Process for all modules	**Chalk and Talk/PowerPoint presentation/YouTube videos.**

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.
2	Verification of Green's theorem.
3	Solution of algebraic and transcendental equations by Regula-Falsi and Newton-Raphson method
4	Interpolation/Extrapolation using Newton's forward and backward difference Formula.
5	Computation of area under the curve using Trapezoidal, Simpson's $(1/3)^{rd}$ and $(3/8)^{th}$ rule.
6	Solution of ODE of first order and first degree by Taylor's series and Modified Euler's method.
7	Solution of ODE of first order and first degree by Runge-Kutta 4^{th} order and Milne's predictor-corrector method.
8	Solutions of Second order ordinary differential equations with initial/boundary conditions.
9	Solution of a differential equation of oscillations of a spring/deflection of a beam with different loads.
10	Solution of one-dimensional heat equation and wave equation.

Course Outcomes:

After successfully completing the course, the students will be able to:

1. Understand the applications of vector calculus refer to solenoidal, irrotational vectors, line integral and surface integral.
2. Apply the knowledge of numerical methods in solving physical and engineering problems.
3. Obtain the solution of higher order ordinary differential equations.
4. Analyze Electronics and communication engineering problems applying Partial Differential Equations.
5. Get familiarize with modern mathematical tools by **PHYTHON** software.

Assessment Details (both CIE and SEE)

Component		Assigned marks	Total	Max. Marks	Min. Marks
CIE's	CIE 1	20	**80 Scale down to 30**	**30**	**12**
	CIE 2	20			
	CIE 3	20			
AAT's	AAT-1- Before CIE 1	10			
	AAT-2- Before CIE 2	10			
PRACTICAL	Practical and Preparation of laboratory record	Each Experiment 15 marks	**Scale down to 15**	**20**	**08**
	Lab test - At the end of the semester	50	**Scale down to 05**		
Continuous Internal Evaluation (CIE) Total Marks				**50**	**20**
Semester End Examination (SEE) Total Marks: 100. Reduced to 50 Marks			**Minimum Pass Marks in SEE : 35 %**		
Total Minimum Pass Marks (CIE+SEE): 40 %					

Suggested Learning Resources:

Text Books:

1. **B. S. Grewal**: "Higher Engineering Mathematics", Khanna publishers, 44th Ed.2018.
2. **E. Kreyszig**: "Advanced Engineering Mathematics", John Wiley & Sons, 10th Ed. (Reprint), 2016.

Reference Books:

1. **B.V. Ramana:** "Higher Engineering Mathematics" McGraw-Hill Education, 11^{th} Ed.
2. **Srimanta Pal & Subodh C.** Bhunia: "Engineering Mathematics" Oxford University Press, 3^{rd} Reprint, 2016.
3. **N.P Bali and Manish Goyal**: "A textbook of Engineering Mathematics" Laxmi Publications, 10^{th} Ed., 2022..
4. **C. Ray Wylie, Louis C. Barrett:** "Advanced Engineering Mathematics" McGraw – Hill Book Co. Newyork, 6^{th} 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 edition, 4th Reprint 2019.

E-Resources:

- http://.ac.in/courses.php?disciplineID=111
- http://www.class-central.com/subject/math(MOOCs)
- http://academicearth.org/
- VTU e-Shikshana Program
- VTU EDUSAT Program

Activity-Based Learning (Suggested Activities in Class)/ Practical Based learning

- Quizzes
- Assignments
- Seminars

CO- PO Mapping :

Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
22MATE21.1	2	1										
22MATE21.2	3	2	2									1
22MATE21.3	3	3										
22MATE21.4	3	2										
22MATE21.5	1	2			3							

Level 3- Highly Mapped, Level 2-Moderately Mapped, Level 1-Low Mapped

Course Title:	**Applied Physics for Computer Science Engineering**		
Course Code:	**22PHYS22**	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+02
Total Hours of Pedagogy	40 hours Theory + 10 to 12 Lab slots	Credits	04

Course objectives

- To study the essentials of photonics for engineering applications.
- To understand the types of oscillation, shock waves & its generation, and applications.
- To study the principles of quantum mechanics and its applications in quantum computing.
- To study the electrical properties of materials.
- To study the essentials of physics for computational aspects like design and data analysis.

Teaching-Learning Process

These are sample Strategies, which teachers can use to accelerate the attainment of the various course outcomes andmake Teaching-Learning more effective

1. Flipped Class
2. Chalk and Talk
3. Blended Mode of Learning
4. Simulations, Interactive Simulations and Animations
5. NPTEL and Other Videos for theory topics
6. Smart Class Room
7. Lab Experiment Videos

Module-1 (8 Hours)

Laser and Optical Fibers:

LASER: Basic properties of a LASER beam, Interaction of Radiation with Matter, Einstein's A and B Coefficients (derivation of expression for energy density), Laser Action, Population Inversion, Metastable State, Requisites of a laser system, Nd-YAG Laser, Application of Lasers.

Optical Fiber: Principle and structure, Acceptance angle and Numerical Aperture (NA) and derivation of Expression for NA, Classification of Optical Fibers, Attenuation and Fiber Losses, Applications: Fiber Optic Communication. Numerical Problems.

Pre-requisite: Properties of light

Self-learning: Total Internal Reflection & Propagation Mechanism (Optical Fibers)

Module-2 (8 Hours)

Quantum Mechanics:

de Broglie Hypothesis and Matter Waves, Photoelectric Effect, Compton Scattering, Dual nature, Heisenberg's Uncertainty Principle and its application (Non-existence of electron inside the nucleus-Non Relativistic), Wave Function, Time independent Schrodinger wave equation (derivation) , Physical Significance of a wave function and Probability density, 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-3 (8 Hours)

Oscillations and Waves

Oscillations: Basics of SHM, derivation of equation for SHM, Equation of motion for free oscillations, Natural frequency of oscillations.

Damped Oscillations: Theory of damped oscillations (derivation), over damping, critical & under damping (graphical representation), quality factor.

Forced Oscillations: Theory of forced oscillations (derivation).

Shock waves: Mach number, Properties 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-4 (8 Hours)

Electrical Properties of Materials and Applications

Free Electron concept, Electrical conductivity in metals, Resistivity and Mobility, Concept of Phonon, Matthiessen's rule. Introduction to Super Conductors, Temperature dependence of resistivity, Meissner's Effect, Silsbee Effect, Types of Superconductors, Temperature dependence of critical field, BCS theory (Qualitative), Quantum Tunneling, High-Temperature superconductivity, Josephson Junction, DC and AC SQUIDs (Qualitative), MAGLEV, Applications in Quantum Computing (Mention). Numerical problems.

Pre-requisites: Basics of Electrical conductivity

Self-learning: Resistivity and Mobility

Module-5 (8 hours)

Quantum Computing:

Wave Function in Ket Notation: Matrix form of wave function, Identity Operator, Determination of I|0> and I|1>, Pauli Matrices and its operations on 0 and 1 states, Mention of Conjugate and Transpose, Unitary Matrix U, Examples: Row and Column Matrices and their multiplication (Inner Product), Probability, Orthogonality

Principles of Quantum Information & Quantum Computing: Introduction to Quantum Computing, Moore's law & its end. Single particle quantum interference, Classical & quantum information comparison. Differences between classical & quantum computing, quantum superposition and the concept of qubit.

Properties of a qubit: Mathematical representation. Summation of probabilities, Representation of qubit by Bloch sphere

Quantum Gates: Single Qubit Gates:Quantum Not Gate, Pauli -Z Gate Hadamard Gate, Pauli Matrices, Phase Gate (or S Gate), T Gate

Multiple Qubit Gates: Controlled gate, CNOT Gate, (Discussion for 4 different input states). Representation of, Swap gate, Controlled-Z gate, Toffoli gate,Accounting for the extra-ordinary capability of quantum computing, Model Realizations.

Pre-requisites: Matrices.

Self-learning: Moore's law

Laboratory Component:

a) Exercise
b) Demonstration (DM)
c) Virtual Lab (VL)
d) Open Ended (OE)

List of Experiments:

1. Wavelength of LASER using Grating
2. Charging and Discharging of a Capacitor
3. Series LCR
4. Parallel LCR
5. Photo-Diode Characteristics
6. Black Box (DM)
7. Fermi Energy (DM)
8. Four Probe Method (VL)
9. Numerical Aperture using Optical fiber (VL)
10. Planck's Constant using LEDs (OE)

Course outcome (Course Skill Set)

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

CO1	**Understand** the fundamentals of photonics, oscillation, waves, quantum mechanics, computing and material properties.
CO2	**Apply** the concept of photonics, oscillation, waves, quantum mechanics, computing and transport phenomena in metals.
CO3	**Determine** the desired parameters for to use it in various engineering applications.
CO4	Usage of **Modern tools** to develop the concept of physics & to perform as a **member of team** to build a model.
CO5	**Conduct**, **analyze** and **interpret** the data and results for applied physics experiments.

Assessment Details (both CIE and SEE)

Component	Type of Assessment	Max. Marks	Total	Reduced Marks	Total
CIE-Theory	**CIE-1**	**20**	**80**	**30**	**50**
	CIE-2	**20**			
	CIE-3	**20**			
	AAT-1(Surprise Test/Quiz)	**10**			
	AAT-2 (Self Study Topic Assignment)	**10**			
CIE-Lab	Record & Performance	**15**	**15**	**20**	
	Lab Test	**20**	**5**		
SEE	End Exam	**100**		**50**	**50**
Grand Total				**100**	

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, 8th Edition, 2018.
2. Engineering Physics by Gupta and Gour, Dhanpat Rai Publications, 2016 (Reprint).
3. Concepts of Modern Physics, ArthurBeiser, McGraw-Hill, 6th Edition, 2009.
4. Lasers and Non-Linear Optics, B B Loud, New age international, 2011 edition.
5. A textbook of Engineering Physics by M .N. Avadhanulu, P G. Kshirsagar and T V S Arun Murthy, Eleventh edition, S Chand and Company Ltd. New Delhi-110055.
6. Quantum Computation and Quantum Information, Michael A. Nielsen & Isaac L. Chuang, Cambridge Universities Press, 2010 Edition.
7. Quantum Computing, Vishal Sahani, McGraw Hill Education, 2007 Edition.
8. Engineering Physics, S P Basavaraj, 2005 Edition,
9. Introduction to Superconductivity, Michael Tinkham, McGraww Hill, INC, II Edition
10. Quantum Computation and Logic: How Quantum Computers Have Inspired Logical Investigations,Maria Luisa Dalla Chiara, Roberto Giuntini, Roberto Leporini, Giuseppe Sergioli,TrendsinLogic, Volume 48, Springer.

Web links and Video Lectures (e-Resources):

LASER: https://www.youtube.com/watch?v=WgzynezPiyc

Superconductivity: https://www.youtube.com/watch?v=MT5Xl5ppn48

Optical Fiber: https://www.youtube.com/watch?v=N_kA8EpCUQo

Quantum Mechanics: https://www.youtube.com/watch?v=p7bzE1E5PMY&t=136s

Quantum Computing: https://www.youtube.com/watch?v=jHoEjvuPoB8

NPTEL Supercoductivity:https://archive.nptel.ac.in/courses/115/103/115103108/

NPTEL Quantum Computing: https://archive.nptel.ac.in/courses/115/101/115101092

Virtual LAB:https://www.vlab.co.in/participating-institute-amrita-vishwa-vidyapeetham

Virtual LAB: https://vlab.amrita.edu/index.php?sub=1&brch=189&sim=343&cnt=1

Activity-Based Learning (Suggested Activities in Class)/Practical-Based Learning

http://nptel.ac.in https://swayam.gov.in

https://virtuallabs.merlot.org/vl_physcs.

htmlhttps://phet.colorado.edu

https://www.myphysicslab.com

COs and POs Mapping (Individual teacher has to fill up)

COs	POs											
	1	**2**	**3**	**4**	**5**	**6**	**7**	8	9	10	11	12
CO1												2
CO2	3	1										2
CO3	3	3										2
CO4	1				2			1	3			2
CO5	1			2	2			1				2

Level 3- Highly Mapped, Level 2-Moderately Mapped, Level 1-Low Mapped

Principles of Programming using C

Course Code	L:T:P: S	CIE Marks	SEE Marks	Total Marks	Exam Hours
22POP23	2:0:2:0	50	50	**100**	**3 +2**
Total Hours of Pedagogy		**40**	**Credits**		03

Course Objectives:

1. Elucidate the basic architecture and functionalities of a Computer system.
2. Apply programming constructs of C programming language to solve the problems.
3. Explore user-defined data structures like arrays, structures and pointers in implementing solutions to problems.
4. Design and develop solutions to problems using modular programming constructs such as functions and procedures

Teaching-Learning Process (General Instructions)

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

1. Lecturer method (L) need not be only a traditional lecture method, but alternative effective teaching methods could be adopted to attain the outcomes.
2. Use of Video/Animation to explain the functioning of various concepts.
3. Encourage collaborative (Group Learning) Learning in the class.
4. Ask at least three HOT (Higher-order Thinking) questions in the class, which promotes critical thinking.
5. Adopt Problem-Based Learning (PBL), which fosters students' Analytical skills, develops design thinking skills such as the ability to design, evaluate, generalize, and analyze information rather than simply recall it.
6. Introduce Topics in manifold representations.
7. Show the different ways to solve the same problem and encourage the students to come up with their own creative ways to solve them.
8. Discuss how every concept can be applied to the real world - and when that's possible, it helps improve the student's understanding.
9. Use https://pythontutor.com/visualize.html#mode=edit in order to visualize the operations of C Programs

Module-1 (6 Hours of Pedagogy)

Introduction to C: Introduction to computers, input and output devices, and designing efficient programs. Introduction to C, Structure of C program, Files used in a C program, Compilers, Compiling and executing C programs, variables, constants, Input/output statements in C.

Textbook: Chapter 1.1-1.9, 2.1-2.2, 8.1 - 8.6 ,9.1-9.14

Teaching-Learning Process:	Chalk and talk method/PowerPoint Presentation/ Web Content: https://tinyurl.com/4xmrexre

Module 2 (6 Hours of Pedagogy)

Operators in C: Operators in C, Type conversion and typecasting.

Decision control and Looping statements: Introduction to decision control, Conditional branching statements, iterative statements, nested loops, break and continue statements, and goto statements.

Textbook: Chapter 9.15-9.16, 10.1-10.6

Teaching-Learning Process:	Chalk and talk method/ PowerPoint Presentation

Module 3 (8 Hours of Pedagogy)

Functions: Introduction using functions, Function definition, function declaration, function call, return statement, passing parameters to functions, the scope of variables, storage classes, and recursive functions.
Arrays: Declaration of arrays, accessing the elements of an array, storing values in arrays, Operations on arrays, Passing arrays to functions, two-dimensional arrays, operations on two-dimensional arrays, two- dimensional arrays to functions, multidimensional arrays, applications of arrays.

Textbook: Chapter 11.1-11.10, 12.1-12.10,12.12

Teaching-Learning Process:	Chalk and talk method/ PowerPoint Presentation

Module 4 (6 Hours of Pedagogy)

Strings and Pointers: Introduction, string taxonomy, operations on strings, Miscellaneous string and character functions, arrays of strings. Pointers: Introduction to pointers, declaring pointer variables, Types of pointers, Passing arguments to functions using pointers.

Textbook: Chapters 13.1-13.6, 14-14.7

Teaching-Learning Process:	Chalk and talk method/ PowerPoint Presentation

Module 5 (6 Hours of Pedagogy)

Structure, Union, and Enumerated data types: Introduction, structures, and functions, Union, Union inside structures, Enumerated data types.
Files: Introduction to files and using files in C, reading and writing data files, Detecting end of file
Textbook: Chapter 15.1 – 15.10, 16.1-16.5

Teaching-Learning Process:	Chalk and talk method/ PowerPoint Presentation

Course Outcomes (Course Skill Set)
At the end of the course, the student will be able to:
CO1. Elucidate the basic architecture and functionalities of a computer and also recognizethe hardware parts.
CO2. Apply programming constructs of C language to solve a real-world problem.
CO3. Explore user-defined data structures like arrays in implementing solutions toproblems like searching and sorting.
CO4. Explore user-defined data structures like structures, Unions and pointers in implementing the solutions.
CO5. Design and develop Solutions to problems using modular programming constructs using functions.

Programming Assignments

1. Simulation of a Simple Calculator.
2. Compute the roots of a quadratic equation by accepting the coefficients. Print appropriate messages.
3. An electricity board charges the following rates for the use of electricity: for the first 200 units 80 paise per unit: for the next 100 units 90 paise per unit: beyond 300 units Rs 1 per unit. All users are charged a minimum of Rs.100 as meter charge. If the total amount is more than Rs 400, then an additional surcharge of 15% of total amount is charged. Write a program to read the name of the user, number of units consumed and print out the charges.
4. Write a C Program to display the following by reading the number of rows as input,

```
                1
            1   2   1
        1   2   3   2   1
    1   2   3   4   3   2   1   nth row
```

5 Implement Binary Search on Integers.
6 Implement Matrix multiplication and validate the rules of multiplication.
7 Compute sin(x)/cos(x) using Taylor series approximation. Compare your result with the built-in library function. Print both the results with appropriate inferences.
8 Sort the given set of N numbers using Bubble sort.
9 Write functions to implement string operations such as compare, concatenate, and find string length. Use the parameter passing techniques.
10 Implement structures to read, write and compute average- marks of the students, list the students scoring above and below the average marks for a class of N students.
11 Develop a program using pointers to compute the sum, mean and standard deviation of all elements stored in an array of N real numbers.
12.Write a C program to copy a text file to another, read both the input file name and target file name. Note:
SEE marks for the practical course is 50 Marks.

SEE shall be conducted jointly by the two examiners of the same institute, examiners are appointed by the University
All laboratory experiments are to be included for practical examination.
(Rubrics) Breakup of marks and the instructions printed on the cover page of the answer script to be strictly adhered to by the examiners. OR based on the course requirement evaluation rubrics shall be decided jointly by examiners.
Students can pick one question (experiment) from the questions lot prepared by the internal /external examiners jointly.
Evaluation of test write-up/ conduction procedure and result/viva will be conducted jointly by examiners.
General rubrics suggested for SEE are mentioned here, writeup-20%, Conduction procedure and result in -60%, Viva-voce 20% of maximum marks. SEE for practical shall be evaluated for 100 marks and scored marks shall be scaled down to 50 marks (however, based on course type, rubrics shall be decided by the examiners)
Students can pick one experiment from the questions lot with equal choice to all the students in a batch. Student should develop an algorithm, program, execute and demonstrate the results with appropriate output for the given problem.
Change of experiment is allowed only once and 15% Marks allotted to the procedure part to be made zero.
The duration of SEE is 02 hours

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

Continuous Internal Evaluation (CIE):

The CIE marks for the theory component of the IC shall be 30 marks and for the laboratory component 20 Marks.

CIE for the theory component of the IC

- Three Tests each of 20 Marks**;** after the completion of the syllabus of 35-40%, 65-70%, and 90-100% respectively.
- Two Assignments/two quizzes/ seminars/one field survey and report presentation/one-course project totaling 20 marks.

Total Marks scored (test + assignments) out of 80 shall be scaled down to **30 marks.**

CIE for the practical component of the IC

- On completion of every experiment/program in the laboratory, the students shall be evaluated and marks shall be awarded on the same day. The **15 marks** are for conducting the experiment and preparation of the laboratory record, the other **05 marks shall be forthe test** conducted at the end of the semester.
- The CIE marks awarded in the case of the Practical component shall be based on the continuous evaluation of the laboratory report. Each experiment report can be evaluated for 10 marks. Marks of all experiments' write-ups are added and scaled down to 15 marks.
- The laboratory test **(duration 03 hours)** at the end of the 15^{th} week of the semester /after completion of all the experiments (whichever is early) shall be conducted for 50 marks andscaled down to **05 marks.**

Scaled-down marks of write-up evaluations and tests added will be CIE marks for the laboratory component of IC/IPCC for **20 marks**.

- The minimum marks to be secured in CIE to appear for SEE shall be 12 (40% of maximum marks) in the theory component and 08 (40% of maximum marks) in the practical component. The laboratory component of the IC/IPCC shall be for CIE only. However, in SEE, the questions from the laboratory component shall be included**.** The maximum of 05 questions is to be set from the practical component of IC/IPCC, the total marks of all questions should not be more than 25 marks.
- The theory component of the IC shall be for both CIE and SEE.

Semester-End Examination:

Theory SEE will be conducted by University as per the scheduled timetable, with common question papers forthe subject (duration 03 hours)

1. The question paper will have ten questions. Each question is set for 20 marks. Marks scored shall beproportionally reduced to 50 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

Suggested Learning Resources:

Textbooks

1. Computer fundamentals and programming in c, "Reema Thareja", Oxford University, Second edition,2017.

Reference Books:

1. E. Balaguruswamy, Programming in ANSI C, 7th Edition, Tata McGraw-Hill.
2. Brian W. Kernighan and Dennis M. Ritchie, The 'C' Programming Language, Prentice Hall of India.

Web links and Video Lectures (e-Resources):

1. elearning.vtu.ac.in/econtent/courses/video/BS/15PCD23.html
2. https://nptel.ac.in/courses/106/105/106105171/ MOOC courses can be adopted for more clarity inunderstanding the topics and verities of problem-solving methods.
3. https://tinyurl.com/4xmrexre

Activity Based Learning (Suggested Activities in Class)/ Practical Based Learning

- Quizzes
- Assignments
- Seminars

	Program Outcomes - POs											
Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
22POP23.1	3	-	1	-	-	2	2	2	3	2	-	2
22POP23.2	3	3	2	2	2	2	2	2	3	2	-	2
22POP23.3	3	3	2	2	2	2	2	2	3	2	-	2
22POP23.4	3	3	2	2	2	2	2	2	3	2	-	2
22POP23.5	3	3	3	3	2	2	2	3	3	3	2	2

Level 3- Highly Mapped, Level 2-Moderately Mapped, Level 1-Low Mapped

Course Title:	**Introduction To Civil Engineering**		
Course Code:	22ESC241	CIE Marks	50
Course Type (Theory/Practical/Integrated)	Theory	SEE Marks	50
		Total Marks	100
Teaching Hours/Week (L:T:P: S)	3-0-0-0	Exam Hours	3 hours
Total Hours of Pedagogy	40	Credits	03

Course objectives

- Course objectives: To Understand the basic principles of civil engineering
- To know the concepts and principles of mechanics for the analysis of the force system
- Able to Compute support reaction in beams, analyze particle kinematics and kinetics, Locate the centroid of the plane and built-up sections
- To Demonstrate the concepts and principles of mechanics to analyze rigid bodies under staticand dynamic conditions
- Compute the moment of inertia of the plane and built-up sections.

Teaching-Learning Process

These are sample Strategies, which teachers can use to accelerate the attainment of the various course outcomes andmake Teaching-Learning more effective

8. Flipped Class
9. Chalk and Talk
10. Blended Mode of Learning
11. Simulations, Interactive Simulations and Animations
12. NPTEL and Other Videos for theory topics
13. Smart Class Room
14. Lab Experiment Videos

Module-1 (8 Hours)

Title of the module

Civil Engineering Disciplines and Building Science

Introduction to Civil Engineering: Surveying, Structural Engineering, Geotechnical Engineering, Hydraulics & Water Resources, Transportation Engineering, Environmental Engineering, Construction planning & Project management.

Basic Materials of Construction: Bricks, Cement & mortars, Plain, Reinforced & Pre-stressed Concrete, Structural steel, and Construction Chemicals.

Structural elements of a building: foundation, plinth, lintel, chejja, Masonry wall, column, beam, slab, and staircase

Pre-requisite: Environment, Physics.

Self-learning: Basics of Environment

Module-2 (8 Hours)

Title of the module

Environment: Water Supply and Sanitary systems, urban pollution management, Solid wastemanagement, identification of Landfill sites.

Transportation: Types of roads, Pavements, Bridges and dams and types, Bullet trains, smart roads, IoT.

Built-environment: Energy efficient buildings, recycling, Temperature and Sound control in buildings, Security systems; Smart buildings, and connected homes.

Pre-requisite: Environment, Physics, Modern Technology

Self-learning: Basics of Environment and Trending Technology

Module-3 (8 Hours)

Title of the module

Analysis of force systems: Concept of idealization, a system of forces, principles of superposition and transmissibility, Resolution and composition of forces, Law of Parallelogram of forces, Resultant of concurrent and non-concurrent coplanar force systems, a moment of forces, couple, Varignon's theorem, equations of equilibrium, equilibrium of concurrent and non-concurrent coplanar force systems

Pre-requisite: Engineering Mechanics, Physics, Math's
Self-learning: Mathematics

Module-4 (8 Hours)

Title of the module

Centroid: Importance of centroid and center of gravity, methods of determining the centroid, locating the centroid of plane laminae from first principles, and the centroid of built-up sections. Numerical examples

Moment of inertia: Importance of Moment of Inertia, method of determining the second moment of area (moment of inertia) of plane sections from first principles, parallel axis theorem and perpendicular axis theorem

Pre-requisite: Engineering Mechanics, Physics, Math's
Self-learning: Mathematics

Module-5 (8 hours)

Title of the module

Kinematics - Introduction, types of motion, velocity and acceleration, Equations of linear motion (no numerical problems), Projectile motion; Numerical problems on projectiles, Kinetics of particles - Introduction,

Newton's Second law of motion, D'Alembert's principle and its application to problems on a system of particles, banking of roads. Work, Power, energy and efficiency, Work-Energy Principle, its application and problems.

Pre-requisite: Engineering Mechanics, Physics, Math's
Self-learning: Mathematics

Course outcome (Course Skill Set) At the end of the course the student will be able to:	
CO1	Understand the basic principles of civil engineering
CO2	Explain the concepts and principles of mechanics for the analysis of the force system
CO3	Compute support reaction in beams, and analyze particle kinematics andkinetics. Locate the centroid of the plane and built-up sections
CO4	Apply the concepts and principles of mechanics to analyze rigid bodies under staticand dynamic conditions
CO5	Compute the moment of inertia of the plane and built-up sections.

Assessment Details (both CIE and SEE)

Component	**Type of Assessment**	**Max. Marks**	**Total**	**Reduced Marks**	**Total**
CIE-Theory	**CIE-1**	**20**	**80**	**30**	**50**
	CIE-2	**20**			
	CIE-3	**20**			
	AAT-1(Surprise Test/Quiz)	**10**			
	AAT-2 (Self Study Topic Assignment)	**10**			
CIE-Lab	Record & Performance	**15**		**20**	
	Lab Test	**5**			
SEE	End Exam	**100**		**50**	**50**
Grand Total				**100**	

Suggested Learning Resources:

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

1. Beer F.P. and Johnston E. R., Mechanics for Engineers, Statics and Dynamics, 1987, McGraw Hill.
2. Irving H. Shames, Engineering Mechanics, 2019, Prentice-Hall.
3. Hibbler R. C., Engineering Mechanics: Principles of Statics and Dynamics, 2017, Pearson Press.
4. Timoshenko S, Young D. H., Rao J. V., Engineering Mechanics, 5th Edition, 2017, Pearson Press.
5. Bhavikatti S S, Engineering Mechanics, 2019, New Age International
6. Reddy Vijaykumar K and Suresh Kumar K, Engineering Mechanics, 2011, BS publication

Web links and Video Lectures (e-Resources):

Activity-Based Learning (Suggested Activities in Class)/Practical-Based Learning

For Example:

http://nptel.ac.in

https://swayam.gov.in

https://virtuallabs.merlot.org/vl_physcs.

htmlhttps://phet.colorado.edu

https://www.myphysicslab.com

List of Experiments:

Laboratory Component:

Note: The experiments have to be classified into

e) Exercise
f) Demonstration (DM)
g) Virtual Lab (VL)
h) Open Ended (OE)

COs and POs Mapping (Individual teacher has to fill up)

POS / COs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3
CO1	2											1	1	2	
CO2	2	3	1									1	1	2	
CO3	2	3	1									1	1	2	
CO4	1	3	1									1	1	2	

Level 3- Highly Mapped, Level 2-Moderately Mapped, Level 1-Low Mapped

INTRODUCTION TO MECHANICAL ENGINEERING

Course Code	L:T:P: S	CIE Marks	SEE Marks	Total Marks	Exam Hours
22ESC244	**3:0:0:0**	**50**	**50**	**100**	**03**
Total Hours of Pedagogy		**40**	**Credits**		**03**

Course Learning Objectives:

The course will enable the students to

1. To develop basic Knowledge on Mechanical Engineering, Fundamentals and Energy Sources.
2. Understand the concept of different types of Machine tool operations and Modern Manufacturing Processes like CNC, 3Dprinting.
3. To know the concept of IC engines and Future Mobility vehicles.
4. To give exposure in the field of Engineering Materials and Manufacturing Process Technology and its applications.
5. To acquire a basic understanding of the role of Mechanical Engineering in the Robotics and Automation industry.

Module-1(8 hours)

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

Energy: Introduction and applications of Energy sources like Fossil fuels, Nuclear fuels, Hydel, Solar- Solar flat plate collector and solar pond, wind, bio-fuels, Environmental issues like Global warming and Ozone depletion.

Module-2 (8 hours)

Machine Tool Operations:

Working Principle of lathe, Lathe operations: Turning, facing, knurling, and Taper turning. Working principles of Drilling Machine, drilling operations: drilling, boring, reaming. Working of Milling Machine, Milling operations: plane 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, Differences between Conventional and CNC machines, , 3D printing and its applications

Module-3(8 hours)

Introduction to IC Engines: Components and Working Principles, 4-Strokes Petrol and Diesel Engines, Application of IC Engines, Performance parameters of IC engines, Simple numericals.

Insight into Future Mobility; Electric and Hybrid Vehicles, Components of Electric and Hybrid Vehicles. Advantages and disadvantages of EVs and Hybrid vehicles.

Module-4 (8 hours)

Engineering Materials: Types and applications of Ferrous & Nonferrous Metals, silica, ceramics, glass, graphite, diamond and polymer. Shape Memory Alloys.

Composite materials - Introduction, Classification, Properties and application of composite materials. Different Matrix and reinforcements for the composite materials.

Joining Processes: Soldering, Brazing and Welding, Definitions, classification of welding process, Arc welding, Gas welding and types of flames.

Module-5 (8 hours)

Introduction to Mechatronics and Robotics: open-loop and closed-loop mechatronic systems. Sensors - Displacement, Position and Proximity sensors, Actuators - Hydraulic and Pneumatic, Classification based on robotics configuration: polar cylindrical, Cartesian coordinate and spherical. Application, Advantages and disadvantages.
Automation in industry: Definition, types – Fixed, programmable and flexible automation, basic elements with block diagrams, advantages.
Introduction to IOT: Definition and Characteristics, Physical design, protocols, Logical design of IOT, Functional blocks, and communication models.

Course Outcomes:

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

1. Recognize the of role of Mechanical Engineering in various sectors and applications of Energy sources in power generation.
2. Apply the knowledge of Machine Tools and advanced Manufacturing processes used for shaping the materials for real-life applications.
3. Comprehend the working principles of I C Engines and Future mobility technologies.
4. Identify the various applications of engineering materials and different metal joining processes.
5. Apply the fundamental knowledge of Robotics and Automation in IoT for solving real life problems in a multidisciplinary approach.

Assessment Details both(CIE and SEE):

Scheme of Evaluation

Continuous Internal Evaluation (CIE) :

CIE-1 at the end of 5th Week	-	20 marks
CIE-2 at the end of 10th Week	-	20 Marks
CIE-3 at the end of 15th Week	-	20 Marks
Assignment-1 at the end of 7th Week	-	20 Marks
Assignment-2 at the end of 14th Week	-	20 Marks
Total	-	100Marks

The sum of three tests and two assignments will be for 100 marks and will be scaled down to 50 marks

Semester End Examination(SEE):

- The question paper shall be set for 100 marks.. The duration of SEE is 03hours.
- The question paper will have 10 questions. Two questions per module. Each question is set for 20 marks. The students have to answer 5 full questions, selecting one full question from each module. The student has to answer for 100 marks and **marks scored out of 100 shall be proportionally reduced to 50 marks**.
- 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.

Suggested Learning Resources:

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

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

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

Reference Books:

1. Elements of Workshop Technology (Vol. 1 and 2), Hazra Choudhry and Nirzar Roy, Media Promoters and Publishers Pvt. Ltd., 2010.
2. Manufacturing Technology-Foundry, Forming and Welding, P.N.Rao Tata McGraw Hill 3rd Ed.,2003.
3. Internal Combustion Engines, V.Ganesan, Tata McGraw Hill Education;4th edition,2017

4. Robotics, Appu Kuttan K K K. International Pvt Ltd, volume1
5. Dr SRN Reddy, Rachit Thukral and Manasi Mishra, " Introduction to Internet of Things: A Practical Approach", ETILabs Raj kamal, " Internet of Things: Architecture and Design", McGraw hill.

Web links and Video Lectures (e-Resources):

- https://rakhoh.com/en/applications-and-advantages-of-steam-in-manufacturing-and- process-industry/)
- Videos | Makino (For Machine Tool Operation)

Activity Based Learning (Suggested Activities in Class)/ Practical Based learning

- Demonstration of lathe/milling/drilling operations
- Demonstration of working of IC Engine.
- Study arc welding
- Video demonstration of latest trends in mobility robotics and Automation
- Demonstration of developing models on machine tools

COs and POs Mapping (CO-PO mappings are only **Indicative)**

COs	POs											
	1	2	3	4	5	6	7	8	9	10	11	12
CO1	3					1	2			1		1
CO2	3					1	1			1		1
CO3	3					1	2			1		1
CO4	3					1	1			1		1
CO5	3					1	1			1		1

Level 3-HighlyMapped, Level2-ModeratelyMapped, Level 1-Low Mapped

Course Title:	**Introduction to Cyber Security**		
Course Code:	**22ETC251**	CIE Marks	50
Course Type (Theory/Practical /Integrated)	Theory	SEE Marks	50
		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

Course objectives

- To familiarize cybercrime terminologies and perspectives
- To understand Cyber Offenses and Botnets
- To gain knowledge on tools and methods used in cybercrimes
- To understand phishing and computer forensics

Teaching-Learning Process

These are sample Strategies, which teacher can use to accelerate the attainment of the various course outcomes and make Teaching –Learning more effective

1. Chalk and Board
2. Demonstration
3. Interactive learning
4. Videos and online material

Module-1 (08 Hours of pedagogy)

Introduction to Cybercrime:

Cybercrime: Definition and Origins of the Word, Cybercrime and Information Security, Who are Cybercriminals? Classifications of Cybercrimes, An Indian Perspective, Hacking and Indian Laws., Global Perspectives

Textbook:1 Chapter 1 (1.1 to 1.5, 1.7-1.9)

Module-2 (08 Hours of pedagogy)

Cyber Offenses:

How Criminals Plan Them: Introduction, How criminals plan the attacks, Social Engineering, Cyber Stalking, Cybercaafe & cybercrimes.

Botnets: The fuel for cybercrime, Attack Vector. Textbook:1 Chapter 2 (2.1 to 2.7)

Module-3 (08 Hours of pedagogy)

Tools and Methods used in Cybercrime: Introduction, Proxy Servers, Anonymizers, Phishing, Password Cracking, Key Loggers and Spyways, Virus and Worms, Trozen Horses and Backdoors, Steganography, DoS and DDOS Attackes, Attacks on Wireless networks.

Textbook:1 Chapter 4 (4.1 to 4.9, 4.12)

Module-4 (08 Hours of pedagogy)

Phishing and Identity Theft: Introduction, methods of phishing, phishing,phising techniques, spear phishing, types of phishing scams, phishing toolkits and spy phishing, counter measures, Identity Theft

Textbook:1 Chapter 5 (5.1. to 5.3)

Module-5 (08 Hours of pedagogy)

Understnading Computer Forensics: Introdcution, Historical Background of Cyberforensics, Digital Foresics Science, Need for Computer Foresics, Cyber Forensics and Digital Evidence, Digital Forensic Life cycle, Chain of Custody Concepts, network forensics.

Textbook:1 Chapter 7 (7.1. to 7.5, 7.7 to 7.9)

Course outcome (Course Skill Set)

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

CO1	Explain the cybercrime terminologies
CO2	Describe Cyber offenses and Botnets
CO3	Illustrate Tools and Methods used on Cybercrime
CO4	Explain Phishing and Identity Theft
CO5	Justify the need of computer forensics

Assessment Details (both CIE and SEE)

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

Continuous Internal Evaluation(CIE):

Three Tests each of 20 Marks**;**

- 1st, 2nd, and 3rd tests shall be conducted after completion of the syllabus of 30-35%, 70-75%, and 90-100% of the course/srespectively.
- Assignments/Seminar/quiz/group discussion /field survey & report presentation/ course project/Skill development activities, suitably planned to attain the COs and POs for a total of 40 Marks.

  If the nature of the courses requires assignments/Seminars/Quizzes/group discussion two evaluation components shall be conducted. If course project/field survey/skill development activities etc then the evaluation method shall be one.

Total CIE marks (out of 100 marks) shall be scaled down to 50 marks

Semester End Examination (SEE):

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

- The question paper shall be set for 100 marks. The medium of the question paper shall be English). The duration of SEE is 03 hours.
- The question paper will have 10 questions. Two questions per module. Each question is set for 20 marks. The students have to answer 5 full questions, selecting one full question from each module. The student has to answer for 100 marks and **marks scored out of 100 shall be proportionally reduced to 50 marks**.
- 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.

Suggested Learning Resources:

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

1. Sunit Belapure and Nina Godbole, "Cyber Security: Understanding Cyber Crimes, Computer Forensics And Legal Perspectives", Wiley India Pvt Ltd, ISBN: 978-81- 265-21791, 2011, First Edition (Reprinted 2018)

Web links and Video Lectures (e-Resources):

- https://www.youtube.com/watch?v=yC_hFm0BX28&list=PLxApjaSnQGi6Jm7LLSxvmNQjS_rt9swsu
- https://www.youtube.com/watch?v=nzZkKoREEGo&list=PL9ooVrP1hQOGPQVeapGsJCktzIO4DtI4_
- https://www.youtube.com/watch?v=6wi5DI6du-4&list=PL_uaeekrhGzJlB8XQBxU3z hDwT95xlk
- https://www.youtube.com/watch?v=KqSqyKwVuA8

Mapping PO-CO

CO\PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
1	2	2	1	2	-	2	1	2	1	1	1	2
2	2	3	2	2	-	2	2	2	1	1	1	2
3	2	2	2	3	2	2	2	1	-	-	-	2
4	2	2	2	-	1	2	-	1	-	-	1	1
5	2	1	2	1	-	2	2	1	1	1	1	2

Level 3- Highly Mapped, Level 2-Moderately Mapped, Level 1-Low Mapped

Course Title:	**Professional Writing Skills in English**		
Course Code:	22ENG 26	CIE Marks	50
Course Type (Theory/Practical /Integrated)	Theory	SEE Marks	50
		Total Marks	100
Teaching Hours/Week (L:T:P: S)	1:0:0:0	Exam Hours	01 Theory
Total Hours of Pedagogy	24 hours	Credits	01

Course objectives:

The course Professional Writing Skills in English (22ENG26) will enable the students,

1. To Identify the Common Errors in Writing and Speaking of English.
2. To Achieve better Technical writing and Presentation skills for employment.
3. To read Technical proposals properly and make them to write good technical reports.
4. To Acquire Employment and Workplace communication skills.
5. To learn about Techniques of Information Transfer through presentation in different level.

Teaching-Learning Process

These are sample Strategies, which teacher can use to accelerate the attainment of the various course outcomes and make Teaching –Learning more effective: Teachers shall adopt suitable pedagogy for effective teaching - learning process. The pedagogy shall involve the combination of different methodologies which suit modern technological tools and software's to meet the present requirements of the Global employment market.

(i) Direct instructional method (Low/Old Technology), (ii) Flipped classrooms (High/advanced Technological tools), (iii) Blended

learning (Combination of both), (iv) Enquiry and evaluation based learning,

(v) Personalized learning, (vi) Problems based learning through discussion, (vii) Following the method of expeditionary learning

Tools and techniques, (viii) Use of audio visual methods through language Labs in teaching of of LSRW skills.

Apart from conventional lecture methods, various types of innovative teaching techniques through videos, animation films may be adapted so that the delivered lesson can progress the students In theoretical applied and practical skills in teaching of communicative skills in general.

Language Lab : To augment LSRW, grammar and Vocabulary skills (Listening, Speaking, Reading, Writing and Grammar, Vocabulary) through tests, activities, exercises etc., comprehensive web-based learning and assessment systems can be referred as per the AICTE / VTU guidelines.

Module-1 (05 hours of pedagogy)

in Writing and Speaking English: Common errors identification in parts of speech, Single, Asking for and Giving Reasons, Grammar: Subject Verb Agreement (Rules with Exercises). Active & passive Voice, Direct & Indirect Speech.

Module-2 (04 hours of pedagogy)

Writing: Organizing Principles of Paragraphs in Documents, Writing Introduction and Conclusion, Precise writing and Techniques in Essay writing, Sentence arrangements and Corrections activities, Errors due to the Confusion of Words.

Module-3 (05 hours of pedagogy)

Technical Reading and Writing Practices: Introduction to Technical Reports Writing, Significance of Reports, Types of Reports. Grammar – Voices and Reported Speech, Spotting Error & Sentence Improvement.

Module-4 (05 hours of pedagogy)

Professional Communication for Employment: Listening Comprehension, Types of Listening, Listening Barriers, Improving Listening Skills. Types of official/employment/business Letters, Emails, Blog Writing, and Memos.

Module-5 (05 hours of pedagogy)

Professional Communication at Workplace: Non-Verbal Communication Skills and its Importance for Students. Presentation Skills and Formal Presentations by Students, Strategies of Presentation Skills. Team work & Group presentation.

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.
CO2	To Achieve better Technical writing and Presentation skills.
CO3	To read Technical proposals properly and make them to Write good technical reports.
CO4	Acquire Employment and Workplace communication skills.
CO5	To learn about Techniques of Information Transfer through presentation in different level.

Assessment Details (both CIE and SEE)

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

CIE -1 at the 5th week	----------	20 marks
CIE -2 at the 10th week	----------	20 marks
CIE -3 at the 15th week	----------	20 marks
AAT-1 at the end of 4th week	----------	20 marks
AAT-2 at the end of 4th week	----------	20 marks
Total	----------	100 marks

Continuous Internal Evaluation(CIE):

Two Unit Tests each of 20 Marks (duration 01 hour)

- First test after the completion of 30-40 % of the syllabus
- Second test after completion of 80-90% of the syllabus

One Improvement test before the closing of the academic term may be conducted if necessary. However best two tests out of three shall be taken into consideration

Two assignments each of 20 Marks

The teacher has to plan the assignments and get them completed by the students well before the closing of the term so that marks entry in the examination portal shall be done in time. Formative (Successive) Assessments include Assignments/Quizzes/Seminars/ Course projects/Field surveys/ Case studies/ Hands-on practice (experiments)/Group Discussions/ others. The Teachers shall choose the types of assignments depending on the requirement of the course and plan to attain the Cos and POs. (To have a less stressed CIE, the portion of the syllabus should not be common /repeated for any of the methods of the CIE. Each method of CIE should have a different syllabus portion of the course). CIE methods /test question paper is designed to attain the different levels of Bloom's taxonomy as per the outcome defined for the course.

The sum of two tests, two assignments, will be out of 100 marks and will be scaled down to 50 marks

Semester End Examinations (SEE)

SEE paper shall be set for 50 questions, each of the 01 mark. The pattern of the question paper is MCQ (multiple choice questions). The time allotted for SEE is 01 hour. The student must secure a minimum of 35% of the maximum marks for SEE.

Suggested Learning Resources:

Textbook:

1) "Professional Writing Skills in English" published by Fillip Learning – Education (ILS), Bangalore – 2022.
2) "Functional English" (As per AICTE 2018 Model Curriculum) (ISBN-978-93-5350-047-4) Cengage learning India Pvt Limited [Latest Edition 2019].

Reference Books:

1) English for Engineers by N.P.Sudharshana and C.Savitha, Cambridge University Press – 2018.
2) Technical Communication by Gajendra Singh Chauhan and Et al, (ISBN-978-93-5350-050-4), Cengage learning India Pvt Limited [Latest Revised Edition] - 2019.
3) Technical Communication – Principles and Practice, Third Edition by Meenakshi Raman and Sangeetha Sharma, Oxford University Press 2017.
4) High School English Grammar & Composition by Wren and Martin, S Chandh & Company Ltd – 2015.
5) Effective Technical Communication – Second Edition by M Ashraf Rizvi, McGraw Hill Education (India) Private

Activity Based Learning (Suggested Activities in Class)/ Practical Based learning

- Contents related activities (Activity-based discussions)
- For active 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

COs & POs Mapping

CO/ PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3
1	-	-	-	-	-	-	-	2	2	2		3			
2	-	-	-	-	-	-	-	2	2	2		2			
3	-	-	-	-	-	-	-	2	2	3		2			
4	-	-	-	-	-	-	-	2	3	2		2			
5	-	-	-	-	-	-	-	3	2	2		3			

Level 3- Highly Mapped, Level 2-Moderately Mapped, Level 1-Low Mapped

Course Title:	ಸಾಂಸ್ಕೃತಿಕ ಕನ್ನಡ		
Course Code:	**22KSK27**	CIE Marks	50
Course Type (Theory/Practical/Integrated)	Theory	SEE Marks	50
		Total Marks	100
Teaching Hours/Week (L:T:P: S)	1:0:0:0	Exam Hours	01
Total Hours of Pedagogy	25	Credits	01

ಸಾಂಸ್ಕೃತಿಕ ಕನ್ನಡ ಪಠ್ಯದ ಕಲಿಕೆಯ ಉದ್ದೇಶಗಳು:

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

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

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

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

ಘಟಕ -1 ಲೇಖನಗಳು

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

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

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

ಸಾಂಸ್ಕೃತಿಕ ಕನ್ನಡ ಕಲಿಕೆಯಿಂದ ವಿದ್ಯಾರ್ಥಿಗಳಿಗೆ ಆಗುವ ಪರಿಣಾಮಗಳು (course Outcomes):

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

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

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

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

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

Two assignments each of **10 Marks : 1.** First assignment at the end of 4th week of the semester
2. Second assignment at the end of 9th week of the semester

Group discussion/Seminar/quiz any one of three suitably planned to attain the COs and POs for **20 Marks (duration 01 hours)**
3. At the end of the 13th week of the semester

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

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

SEE will be conducted by University as per the scheduled timetable, with common question papers for the subject.
1. The question paper will have 50 questions. Each question is set for 01 mark.

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

ಪಠ್ಯಪುಸ್ತಕ :

ಸಾಂಸ್ಕೃತಿಕ ಕನ್ನಡ

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

ಪ್ರಸಾರಾಂಗ, ವಿಶ್ವೇಶ್ವರಯ್ಯ ತಾಂತ್ರಿಕ ವಿಶ್ವವಿದ್ಯಾಲಯ, ಬೆಳಗಾವಿ.

COs and POs Mapping

COs	POs											
	1	2	3	4	5	6	7	8	9	10	11	12
CO1										2		
CO2										2		
CO3										2		
CO4										2		

Level 3- Highly Mapped, Level 2-Moderately Mapped, Level 1-Low Mapped

ಬಳಕೆ ಕನ್ನಡ BaLake Kannada (Kannada for Usage) ಕನ್ನಡ ಕಲಿಕೆಗಾಗಿ ನಿಗದಿಪಡಿಸಿದ ಪಠ್ಯಪುಸ್ತಕ - (Prescribed Textbook to Learn Kannada)			
ವಿಷಯ ಸಂಕೇತ (Course Code)	22KBK27	ನಿರಂತರ ಅಂತರಿಕ ಮೌಲ್ಯಮಾಪನದ ಅಂಕಗಳು (Continous Internal Evalution Marks)	50
ಒಂದು ವಾರಕ್ಕೆ ಬೋಧನಾ ಅವಧಿ (Teaching Hours/Week (L:T:P:S)	1:0:0:0	ಸೆಮಿಸ್ಟರ್ ಅಂತ್ಯದ ಪರೀಕ್ಷೆಯ ಅಂಕಗಳು (Semester End Examination Marks)	50
ಒಟ್ಟು ಬೋಧನಾ ಅವಧಿ Total Hours of Pedagogy	16 ಗಂಟೆಗಳ	ಒಟ್ಟು ಅಂಕಗಳು (Total Marks)	100
Credits	01	ಪರೀಕ್ಷೆಯ ಅವಧಿ (Exam Hours)	1 ಗಂಟೆ

ಬಳಕೆ ಕನ್ನಡ ಪಠ್ಯದ ಕಲಿಕೆಯ ಉದ್ದೇಶಗಳು (Course Learning Objectives)

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

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

These are sample strategies which teachers can use to accelerate the attainment of the course outcomes.

1. ಬಳಕೆ ಕನ್ನಡವನ್ನು ತರಗತಿಯಲ್ಲಿ ಶಿಕ್ಷಕರು ಬೋಧಿಸಲು ಸೂಚಿಸಿದ ಪಠ್ಯಪುಸ್ತಕವನ್ನು ಉಪಯೋಗಿಸಬೇಕು.
2. ಪ್ರಮುಖ ಅಂಶಗಳನ್ನು ತಯಾರಿಸಲು ವಿದ್ಯಾರ್ಥಿಗಳನ್ನು ಉತ್ತೇಜಿಸುವುದು ತರಗತಿಯಲ್ಲಿ ಅವುಗಳನ್ನು ಚರ್ಚಿಸಲು ಅವಕಾಶ ಮಾಡಿಕೊಡುವುದು.
3. ಪ್ರತಿ ವಿದ್ಯಾರ್ಥಿ ಪುಸ್ತಕವನ್ನು ತರಗತಿಯಲ್ಲಿ ಬಳಸುವಂತೆ ನೋಡಿಕೊಳ್ಳುವುದು ಮತ್ತು ಪ್ರತಿ ಪಾಠ ಮತ್ತು ಪ್ರವಚನಗಳ ಮೂಲಕ ವಿಷಯಗಳಿಗೆ ಸಂಬಂಧಪಟ್ಟಂತೆ ಪೂರಕ ಚಟುವಟಿಕೆಗಳಿಗೆ ತೊಡಗಿಸು ತಕ್ಕದ್ದು.
4. ಡಿಜಿಟಲ್ ತಂತ್ರಜ್ಞಾನ ಮುಖಾಂತರ ಇತ್ತೀಚಿಗೆ ಡಿಜಿಟಲೀಕರಣ ಭಾಷೆ ಕಲಿಕೆಯ ವಿಧಾನಗಳನ್ನು ಮತ್ತು ದೃಶ್ಯ ಮಾಧ್ಯಮದ ಮುಖಾಂತರ ಚರ್ಚಿಸಲು ಕ್ರಮಕೈಗೊಳ್ಳುವುದು ಇದರಿಂದ ವಿದ್ಯಾರ್ಥಿಗಳನ್ನು ತರಗತಿಯಲ್ಲಿ ಏಕಾಗ್ರತೆಯಿಂದ ಪಾಠ ಕೇಳಲು ಮತ್ತು ಅಧ್ಯಯನದಲ್ಲಿ ತೊಡಗಲು ಅನುಕೂಲವಾಗುತ್ತದೆ.
5. ಭಾಷಾ ಕಲಿಕೆಯ ಪ್ರಯೋಗಾಲಯದ ಮುಖಾಂತರ ಬಹುಬೇಗ ಕನ್ನಡ ಭಾಷೆಯನ್ನು ಕಲಿಯಲು ಅನುಕೂಲವಾಗುವಂತೆ ಕಾರ್ಯಚಟುವಟಿಕೆಗಳನ್ನು ಮತ್ತು ಕ್ರಿಯಾ ಯೋಜನೆಗಳನ್ನು ರೂಪಿಸುವುದು.

Module – 1	03 hours

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

ಬೋಧನೆ ಮತ್ತು ಕಲಿಕಾ ವಿಧಾನ	ಪುಸ್ತಕ ಆಧಾರಿತ ಬ್ಲಾಕ್ಬೋರ್ಡ್ ವಿಧಾನ ಪ್ರಮುಖ ಅಂಶಗಳು ಚಾರ್ಟ್ ಗಳನ್ನು ಬೆಳೆಸುವುದು ಪಿಪಿಟಿ ಮತ್ತು ದೃಶ್ಯಮಾಧ್ಯಮದ ವಿಡಿಯೋಗಳನ್ನು ಬಳಸುವುದು ವಿದ್ಯಾರ್ಥಿಗಳೊಂದಿಗೆ ಚಟುವಟಿಕೆಗಳ ಮುಖಾಂತರ ಚರ್ಚಿಸುವುದು

Module – 2	**03 hours**

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

ಬೋಧನೆ ಮತ್ತು ಕಲಿಕಾ ವಿಧಾನ	ಪುಸ್ತಕ ಆಧಾರಿತ ಬ್ಲಾಕ್ಬೋರ್ಡ್ ವಿಧಾನ ಪ್ರಮುಖ ಅಂಶಗಳು ಚಾರ್ಟ್ ಗಳನ್ನು ಬೆಳೆಸುವುದು ಪಿಪಿಟಿ ಮತ್ತು ದೃಶ್ಯಮಾಧ್ಯಮದ ವಿಡಿಯೋಗಳನ್ನು ಬಳಸುವುದು ವಿದ್ಯಾರ್ಥಿಗಳೊಂದಿಗೆ ಚಟುವಟಿಕೆಗಳ ಮುಖಾಂತರ ಚರ್ಚಿಸುವುದು

Module – 3 **03 hours**

1. ಚತುರ್ಥಿ ವಿಭಕ್ತಿ ಪ್ರತ್ಯಯದ ಬಳಕೆ ಮತ್ತು ಸಂಖ್ಯಾವಾಚಕಗಳು – Dative Cases and Numerals
2. ಸಂಖ್ಯೆ ಗುಣವಾಚಕಗಳು ಮತ್ತು ಬಹುವಚನ ನಾಮರೂಪಗಳು – Ordinal numerals and Plural markers.
3. ನ್ಯೂನ ನಿಷೇದಾರ್ಥಕ ಕ್ರಿಯಾಪದಗಳು ಮತ್ತು ವರ್ಣ ಗುಣವಾಚಕಗಳು – Defective/ Negative Verbs and colour Adjectives.

ಬೋಧನೆ ಮತ್ತು ಕಲಿಕಾ ವಿಧಾನ	ಪುಸ್ತಕ ಆಧಾರಿತ ಬ್ಲಾಕ್ಬೋರ್ಡ್ ವಿಧಾನ ಪ್ರಮುಖ ಅಂಶಗಳು ಚಾರ್ಟ್ ಗಳನ್ನು ಬೆಳೆಸುವುದು ಪಿಪಿಟಿ ಮತ್ತು ದೃಶ್ಯಮಾಧ್ಯಮದ ವಿಡಿಯೋಗಳನ್ನು ಬಳಸುವುದು ವಿದ್ಯಾರ್ಥಿಗಳೊಂದಿಗೆ ಚಟುವಟಿಕೆಗಳ ಮುಖಾಂತರ ಚರ್ಚಿಸುವುದು

Module – 4 **03 hours**

1. ಅಪ್ಪಣೆ /ಒಪ್ಪಿಗೆ, ನಿರ್ದೇಶನ,ಪ್ರೋತ್ಸಾಹ ಮತ್ತು ಒತ್ತಾಯ ಅರ್ಥರೂಪ ಪದಗಳು ಮತ್ತು ವಾಕ್ಯಗಳು
Permission, Commands, encouraging and Urging words (Imperative words and sentences)
2. ಸಾಮಾನ್ಯ ಸಂಭಾಷಣೆಗಳಲ್ಲಿ ದ್ವಿತೀಯ ವಿಭಕ್ತಿ ಪ್ರತ್ಯಯಗಳು ಮತ್ತು ಸಂಭವನೀಯ ಪ್ರಕಾರಗಳು
Accusative Cases and Potential Forms used in General Communication
3. "ಇರು ಮತ್ತು ಇರಲ್ಲ" ಸಹಾಯಕ ಕ್ರಿಯಾಪದಗಳು, ಸಂಭಾವ್ಯ ಸೂಚಕ ಮತ್ತು ನಿಷೇದಾರ್ಥಕ ಕ್ರಿಯಾಪದಗಳು
Helping Verbs "iru and iralla", Corresponding Future and Negation Verbs
4. ಹೋಲಿಕೆ (ತರತಮ), ಸಂಬಂಧಸೂಚಕ, ಮತ್ತು ವಸ್ತು ಸೂಚಕ ಪ್ರತ್ಯಯಗಳು ಮತ್ತು ನಿಷೇದಾರ್ಥಕ ಪದಗಳ ಬಳಕೆ
Comparitive, Relationship, Identification and Negation words.

ಬೋಧನೆ ಮತ್ತು ಕಲಿಕಾ ವಿಧಾನ	ಪುಸ್ತಕ ಆಧಾರಿತ ಬ್ಲಾಕ್ಬೋರ್ಡ್ ವಿಧಾನ ಪ್ರಮುಖ ಅಂಶಗಳು ಚಾರ್ಟ್ ಗಳನ್ನು ಬೆಳೆಸುವುದು ಪಿಪಿಟಿ ಮತ್ತು ದೃಶ್ಯಮಾಧ್ಯಮದ ವಿಡಿಯೋಗಳನ್ನು ಬಳಸುವುದು ವಿದ್ಯಾರ್ಥಿಗಳೊಂದಿಗೆ ಚಟುವಟಿಕೆಗಳ ಮುಖಾಂತರ ಚರ್ಚಿಸುವುದು

Module – 5 **03 hours**

1. ಕಾಲ ಮತ್ತು ಸಮಯದ ಹಾಗೂ ಕ್ರಿಯಾಪದಗಳ ವಿವಿಧ ಪ್ರಕಾರಗಳು- Different types of tens, time and verbs. Negation Verbs.
2. ದ್, ತ್, ತು,ಇತು,ಆಗಿ,ಅಲ್ಲ, ಗ್ ,ಕ್, ಇದೆ, ಕ್ರಿಯಾ ಪ್ರತ್ಯಯಗಳೊಂದಿಗೆ ಭೂತ, ಭವಿಷ್ಯತ್ ಮತ್ತು ವರ್ತಮಾನ ಕಾಲ ವಾಕ್ಯ ರಚನೆ – Formation of past, Future and present Tense Sentences with Verb Forms.
3. Kannada Vocabulary list: ಸಂಭಾಷಣೆಯಲ್ಲಿ ದಿನೋಪಯೋಗಿ ಕನ್ನಡ ಪದಗಳು – Kannada words in conversation.

ಬೋಧನೆ ಮತ್ತು ಕಲಿಕಾ ವಿಧಾನ	ಪುಸ್ತಕ ಆಧಾರಿತ ಬ್ಲಾಕ್ಬೋರ್ಡ್ ವಿಧಾನ ಪ್ರಮುಖ ಅಂಶಗಳು ಚಾರ್ಟ್ ಗಳನ್ನು ಬೆಳೆಸುವುದು ಪಿಪಿಟಿ ಮತ್ತು ದೃಶ್ಯಮಾಧ್ಯಮದ ವಿಡಿಯೋಗಳನ್ನು ಬಳಸುವುದು ವಿದ್ಯಾರ್ಥಿಗಳೊಂದಿಗೆ ಚಟುವಟಿಕೆಗಳ ಮುಖಾಂತರ ಚರ್ಚಿಸುವುದು

ಬಳಕೆ ಕನ್ನಡ ಪಠ್ಯದ ಕಲಿಕೆಯಿಂದ ವಿದ್ಯಾರ್ಥಿಗಳಿಗೆ ಆಗುವ ಅನುಕೂಲಗಳು ಮತ್ತು ಫಲಿತಾಂಶಗಳು

At the end of the course, The Student will be able to:

1. To understand the necessity of learning of local language for comfortable life.
2. To listen and understand the Kannada language properly

3. To speak, read and write the Kannada language as per requirement.
4. To communicate (converse) in the Kannada language in their daily with Kannada speakers.
5. To speak in polite conservation./

Assessment Details (both CIE and SEE)

Component		Assigned marks		Max. Marks	Min. Marks
CIE's	CIE 1	20	**60**	**100**	**40**
	CIE 2	20			
	CIE 3	20			
AAT's	AAT-1- Before CIE 1	20	**40**		
	AAT-2- Before CIE 2	20			
Continuous Internal Evaluation (CIE) Total Marks				**100**	**40**
Semester End Examination (SEE) Total Marks				**100**	***35**
Continuous Internal Evaluation Total Marks: 100. Reduced to 50 Marks					
Semester End Examination (SEE) Total Marks: 100. Reduced to 50 Marks					
Minimum Pass Marks (CIE+SEE): 40 %					
Note: *Provided should have more than 45% in CIE					

ಸೆಮಿಸ್ಟರ್ ಅಂತ್ಯದ ಪರೀಕ್ಷೆಯು ಈ ಕೆಳಗಿನಂತಿರುತ್ತದೆ Semester End Exam (SEE)

SEE will be conducted by the College as per the scheduled timetable, with common question paper from the subject.

1. The question paper will have 50 questions. Each question is set for the 02 mark.
2. SEE Pattern will be in MCQ model for 100 marks Duration of the exam is 01 Hour.

Text Book :

ಬಳಕೆ ಕನ್ನಡ

ಲೇಖಕರು : ಡಾ. ಎಲ್. ತಿಮ್ಮೇಶ,

ಪ್ರಸಾರಂಗ, ವಿಶ್ವೇಶ್ವರಯ್ಯ ತಾಂತ್ರಿಕ ವಿಶ್ವವಿದ್ಯಾಲಯ ಬೆಳಗಾವಿ.

CO-PO MAPPING FOR BALAKE KANNADA

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3
CO1	-	-	-	-	-	-	2	-	-	3	-	-	-	-	-
CO2	-	-	-	-	-	-	2	-	-	2	-	-	-	-	-
CO3	-	-	-	-	-	-	2	-	-	2	-	-	-	-	-
CO4	-	-	-	-	-	-	3	-	-	3	-	-	-	-	-
CO5	-	-	-	-	-	-	2	-	-	3	-	-	-	-	-

Level 3- Highly Mapped, Level 2-Moderately Mapped, Level 1-Low Mapped

INNOVATION AND DESIGN THINKING

Course Code	L:T:P: S	CIE Marks	SEE Marks	Total Marks	Exam Hours
22IDT28	1:0:0:0	50	50	100	01
Total Hours of Pedagogy		15	Credits		01

Course Learning Objectives:

The course will enable the students to

1. Understand the fundamental concept of innovation and design thinking.
2. Brief the basic concepts and techniques of analysis.
3. Explain the concept of business process modelling in agile environment.
4. Understand the strategies in design thinking and innovations.
5. Discuss the methods of implementing design thinking in the real world.

Module-1 (3 hours)

Process of Design:
Understanding Design Thinking, Shared Model in team, based Design, Theory and practice indesign thinking, explore presentations and signers across globe, MVP or prototyping.

Module-2 (3 hours)

Tools for Design Thinking:
Real-time design interaction capture and analysis, Enabling efficient collaboration in digitalspace, empathy for design, collaboration in disturbed design.

Module-3 (3 hours)

Design thinking in IT:
Design thinking to business process modelling, agile in virtual collaboration environment,scenario based prototyping.

Module-4 (3 hours)

Design thinking for strategic innovations:
Growth, storytelling representation, strategic foresight, change, sense making, maintenance relevance, value redefinition, extreme competition, experience design, standardization, humanization, creative culture, rapid prototyping, strategy and organization, business modeldesign.

Module-5 (3 hours)

Design thinking workshop:
Design thinking workshop Empathize, Design, Ideate, Prototype and Test.

Course Outcomes:

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

1. Appreciate various design process procedure.
2. Analysis the problem with different techniques.
3. Generate and develop business process modelling scenario-based prototyping.
4. Identify the strategies followed in various fields of design thinking.
5. Draw technical drawing for design ideas.

Assessment Details both (CIE and SEE):

Scheme of Evaluation

Continuous Internal Evaluation (CIE) :

CIE-1 at the end of 5th Week	-	20 marks
CIE-2 at the end of 10th Week	-	20 Marks
CIE-3 at the end of 15th Week	-	20 Marks
AAT-1 at the end of 4th Week	-	20 Marks
AAT-2 at the end of 9th Week	-	20 Marks
Total	-	100 Marks

The sum of three tests and two AATs will be out of 100 marks and will be **scaled down to50 marks**

Semester End Examination (SEE):

- The question paper shall be set for 50 marks. The duration of SEE is 01hour.
- The question paper will have 50 questions. The pattern of question paper is MCQ.

Suggested Learning Resources:

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

1. John.R.Karsnitz, Stephen O'Brien and John P. Hutchinson, "Engineering Design", Cengagelearning (International edition) Second Edition, 2013.
2. Roger Martin, "The Design of Business: Why Design Thinking is the Next Competitive Advantage", Harvard Business Press, 2009. Third Edition, 2012.
3. Hasso Plattner, Christoph Meinel and Larry Leifer (eds), "Design Thinking: Understand – Improve – Apply", Springer, 2011.
4. Idris Mootee, "Design Thinking for Strategic Innovation: What They Can't Teach You atBusiness or Design School", John Wiley & Sons 2013.

Reference Books:

1. Yousef Haik and Tamer M.Shahin, "Engineering Design Process", Cengage Learning,Second Edition, 2011.
2. Book - Solving Problems with Design Thinking - Ten Stories of What Works (Columbia Business School Publishing) Hardcover – 20 Sep 2013 by Jeanne Liedtka (Author), AndrewKing (Author), Kevin Bennett (Author).

Web links and Video Lectures (e-Resources):

- www.tutor2u.net/business/presentations/. /productlifecycle/default.html
- https://docs.oracle.com/cd/E11108_02/otn/pdf/. /E11087_01.pdf
- www.bizfilings.com › Home › Marketing › Product Development
- https://www.mindtools.com/brainstm.html
- https://www.quicksprout.com/. /how-to-reverse-engineer-your-competition
- www.vertabelo.com/blog/documentation/reverse-engineering
- https://support.microsoft.com/en-us/kb/273814
- https://support.google.com/docs/answer/179740?hl=en
- https://www.youtube.com/watch?v=2mjSDIBaUlM
- thevirtualinstructor.com/foreshortening.html
- https://dschool.stanford.edu/.../designresources/.../ModeGuideBOOTCAMP2010L.pdf
- https://dschool.stanford.edu/use-our-methods/ 6. https://www.interactiondesign.
- org/literature/article/5-stages-in-the-design-thinking-process 7.
- http://www.creativityatwork.com/design-thinking-strategy-for-innovation/ 49 8.
- https://www.nngroup.com/articles/design-thinking/ 9.

- https://designthinkingforeducators.com/design-thinking/ 10.
- www.designthinkingformobility.org/wp-content/.../10/NapkinPitch_Worksheet.pdf

Activity Based Learning (Suggested Activities in Class)/ Practical Based learning

- http://dschool.stanford.edu/dgift/

CO-PO Mapping

COs	POs											
	1	2	3	4	5	6	7	8	9	10	11	12
CO1	1	1		1	1	1			1	1	1	1
CO2	2	1	1		2		1		2	1	1	1
CO3	1	1	2	1	2	1			1	1	1	1
CO4	1	1	1	2	1	1	1		1	1	2	1
CO5	1	1	1	2	2	1	1	1	1	2	1	1

Level 3-HighlyMapped, Level 2-Moderately Mapped, Level 1-Low Mapped