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

2023-24

Physics Cycle – CSE Stream

Second Semester Physics Cycle CSE Stream												
				Teaching Hours/week				**Examination**				
Sl. No.	**Course & Course code**		**Course Title**	**TD /PSB**	Theory Lecture	Tutorial	Practical/ Drawing	SDA	Duration in hours	CIE Marks	SEE Marks	Total Marks	Credits
					L	**T**	**P**	**S**					
1	*ASC(IC)	23MATS21	Advanced Calculus And Numerical Methods For CSE Stream	Maths	2	2	2	0	03	50	50	100	04
2	#ASC(IC)	23PHYS22	Applied Physics for CSE	Physics	2	2	2	0	03	50	50	100	04
3	ESC	23POP23	Principles of Programming using C	CSE	2	0	2	0	03	50	50	100	03
4	ESC-1	23ESC241	Introduction to Civil Engineering	CV	3	0	0	0	03	50	50	100	03
	OR												
	ESC-1	23ESC244	Introduction to Mechanical Engineering	ME	3	0	0	0	03				
5	ETC-1	23ETC25F	Waste Management	CSE	3	0	0	0	03	50	50	100	03
6	AEC	23ENG26	Communicative English	Humanities	1	0	0	0	01	50	50	100	01
7	HSMC	23KSK27	Samskrutika Kannada	Humanities	1	0	0	0	01	50	50	100	01
		23KBK27	Balake Kannada										
8	AEC	23IDT28	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 end 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	23MATS21	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 4th 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)

Evaluation Details:

Evaluation Type		Component	Max Marks	Marks Reduced to	Min. Marks	Evaluation Details
Theory Component	Internal Assessment Tests(IAT)	IAT-1	25	15		Average of two IATs, Scaled down to 15 marks
		IAT-2	25			
	Comprehensive Continuous Evaluations (CCE)	CCE-1	10		10	Any two Assessment met as per 22OB4.2 of regulations, Average of two CCEs, scaled Down to 10marks
		CCE-2	10	10		
	Total CIE -Theory			**25**	**10**	Scale down marks of IAT and CCE to25
Laboratory Component	Practicaland Lab Record	-	15			Conduction of experiments and preparation of Lab records, etc
	Lab Test	50	10	25	10	One test to be conducted after the completion of All lab experiments.
	Total CIE –Practical			**25**	**10**	
	Total CIE (Theory + Lab)			**50**	**20**	
	SEE		100	**50**	**18**	Conducted for 100 marks and scaled down to 50.
	CIE + SEE			**100**	**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, 11th Ed.
2. **Srimanta Pal & Subodh C.** Bhunia: "Engineering Mathematics" Oxford University Press, 3rd Reprint, 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 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
23MATS21.1	2	1										
23MATS21.2	3	2	2									1
23MATS21.3	3	3										
23MATS21.4	3	2										
23MATS21.5	1	2			3							

Level 3- Highly Mapped,   Level 2-Moderately Mapped,   Level 1-Low Mapped,   Level 0- Not Mapped

Course Title:		Applied Physics for Computer Science Engineering		
Course Code:		**23PHYS12/22**	CCE 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 CCE and SEE)

Evaluation Type		Component	Max. Marks	Marks reduced to	Min. Marks	Evaluation Details
Theory Component	**Internal Assessment Test(IAT)**	**IAT - 1**	**25**	15	10	**Average of two IATs, Scaled down to 15 marks**
		IAT - 2	**25**			
	Comprehensive Continuous Evaluations (CCE)	**CCE -1**	**10**	10		**Minimum of two Assessments methods as per 22OB4.2 of regulations. Average of CCEs, scaled down to 10marks.**
		CCE -2	**10**			
	Total CIE – Theory			25	10	**Scale down marks of IAT & CCE to 25**
Laboratory Component	Practical and Lab Records	-	15	25	10	**Conduction of experiments and preparation of Lab records, etc.**
	Lab test	50	10			**One test to be conducted after the completion of all lab experiments.**
	Total CIE – Practicals			25	10	
Total CIE (Theory + Lab)				50	20	
SEE			100	50	18	**Conduction of 100 marks and scaled down to 50.**
CIE + SEE				**100**	**40**	

The minimum marks to be secured in CIE to appear for SEE shall be 10(40% of minimum marks: 25) in theory component and 10(40% of maximum marks: 25) in the practical component. The laboratory component of the IPCC/Integrated course shall be for CIE only. However, in SEE, the questions from the laboratory component shall be included in the question paper.

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	0	0	0	0	0	0	0	0	0	0	0	2
CO2	3	1	0	0	0	0	0	0	0	0	0	2
CO3	3	3	0	0	0	0	0	0	0	0	0	2
CO4	1	0	0	0	2	0	0	1	3	0	0	2
CO5	1	0	0	2	2	0	0	1	0	0	0	2

Level 3- Highly Mapped, Level 2-Moderately Mapped, Level 1-Low Mapped, Level 0- Not Mapped

Course Title:	Principles of Programming using C		
Course Code:	23POP13/23	CIE Marks	50
Course Type (Theory/Practical/Integrated)	Integrated	SEE Marks	50
		Total Marks	100
Teaching Hours/Week (L: T: P: S)	2:0:2:0	Exam Hours	3+2
Total Hours of Pedagogy	40 hours	Credits	03

Course objectives

- CLO 1: Elucidate the basic architecture and functionalities of a computer.
- CLO 2: Apply programming constructs of C language to solve the real-world problems.
- CLO 3: Explore user-defined data structures such as arrays, structures and pointers in implementing solutions to problems.
- CL0 4: Design and develop solutions to problems using structured programming constructs such as functions and procedures.

Teaching-Learning Process

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

1. Lecturer method (L) need not to be only traditional lecture method, but alternative effective teaching methods could be adopted to attain the outcomes.
2. Use of Video/Animation to explain 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, develop 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 to improve the students' understanding.
9. Use https://pythontutor.com/visualize.html#mode=edit in order to visualize the operations of C Programs.

Module-1 (8 Hours)

Introduction to Computer Systems and C Programming Language: Introduction to computers, input and output devices, 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.

Pre-requisite: Basic Mathematics, Basics of Computer Organization
Self-learning: Sample programs to demonstrate the compilation and execution of C programs, use of variables, constants and Input / Output statements in C.
Textbook: Chapter 1.1-1.9, 2.1-2.2, 8.1 - 8.6 ,9.1-9.14

Module-2 (8 Hours)

Operators and Expressions, Decision Control and Looping Statements
Operators and Expressions: 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, goto statement.

Pre-requisite: Basic Mathematics, Basics of Computer Organization
Self-learning: Sample C programs to demonstrate the use of expressions, decision control and looping constructs.
Textbook: Chapter 9.15-9.16, 10.1-10.6

Module-3 (8 Hours)

Arrays and Functions
Functions: Introduction using functions, Function definition, function declaration, function call, return statement, passing parameters to functions, scope of variables, storage classes, 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.

Pre-requisite: Basic Mathematics, Basics of Computer Organization
Self-learning: Sample C programs to demonstrate the use of arrays and program modularization.

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

Module-4 (8 Hours)

Strings and Pointers
Strings: 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.

Pre-requisite: Basic Mathematics, Basics of Computer Organization
Self-learning: Sample programs to demonstrate the use of strings and pointers.

Textbook: Chapter 13.1-13.6, 14-14.7

Module-5 (8 hours)

Structure, Union, and Enumerated Data Type: Introduction, structures and functions, Unions, unions inside structures, Enumerated data type.
Files: Introduction to files, using files in C, reading and writing data files, Detecting end of file.

Pre-requisite: Basic Mathematics, Basics of Computer Organization
Self-learning: Sample programs to demonstrate the use of structures, unions and file access.

Textbook: Chapter 15.1 – 15.10, 16.1-16.5

List of Experiments:

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 amountis 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

n^{th} 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 theparameter passing techniques.

10 Implement structures to read, write and compute average- marks of the students, list the students scoring aboveand 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 inan 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

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 in understanding 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**

Course outcome (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.
CO2	Apply programming constructs in C to solve the real-world problem.
CO3	Explore user-defined data structures like arrays in implementing solutions to problems like searching and sorting.
CO4	Explore user-defined data structures like structures, unions and pointers in implementing solutions.
CO5	Design and develop solutions to problems using modular programming constructs.

INTRODUCTION TO MECHANICAL ENGINEERING

Course Code	L:T:P: S	CIE Marks	SEE Marks	Total Marks	Exam Hours
23ESC144/244	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 EnergySources.
2. Understand the concept of different types of Machine tool operations and ModernManufacturing 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 ManufacturingProcess Technology and its applications.
5. To acquire a basic understanding of the role of Mechanical Engineering in theRobotics 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, , 3Dprinting and its applications

Module-3

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 compositematerials. Different Matrix and reinforcements for the composite materials.

Joining Processes: Soldering, Brazing and Welding, Definitions, classification of weldingprocess, 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 ofEnergy sources in power generation.

2. Apply the knowledge of Machine Tools and advanced Manufacturing processes used for **s**haping the materials for real-life applications.

3. Comprehend the working principles of I C Engines and Future mobilitytechnologies.

4. Identify the various applications of engineering materials and different metal joiningprocesses.

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) :

IAT-1 at the end of 8th Week	-	25 marks
IAT-2 at the end of 13th Week	-	25 Marks
CCE-1 at the end of 4th Week	-	25 Marks
CCE-2 at the end of 9th Week	-	25 Marks
Total	-	100 Marks

The average of two IAT1 scaled down to 25 marks and average of two CCE's scaled down to 25marks shall be considered as CIE marks of the course.

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** underthat module.

Suggested Learning Resources:

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

1. 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, Level 0- Not Mapped												

Introduction to Civil Engineering & Engineering Mechanics			
Course Code:	**23ESC141/241**	**CIE Marks**	**50**
Teaching Hours/Week (L: T: P: S) (3:0:0:0)	**Credits (3:0:0:0)**	**SEE Marks**	**50**
Total Hours of Pedagogy	**40 hours Theory**	**Total Marks**	**100**
Credits	**03**	**Exam Hours**	**03**

Course objectives:

This course will enable students to:

1. The scope of various specializations of civil engineering.
2. The ability to analyze the problems solving skill involving forces, moments with their applications.
3. The ability to find out the center of the plane lamina and the inertial counter force with their applications.
4. The behavior of the moving objects.

Teaching-Learning Process (General Instructions)

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

- Lecture method (L) does not mean only traditional lecture method, but different type of teaching methods may be adopted to develop the outcomes.
- Arrange visits to nearby sites to give brief information about the civil engineering structures.
- Show video/ animation films to explain the infrastructure and the mechanism involved in the principle.
- Ask at least three HOTS (Higher order Thinking) questions in the class, which promotes critical thinking.
- Adopt Problem Based Learning (PBL), which fosters students' Analytical skills, develop thinking skills such as the ability to evaluate, generalize, and analyze information rather than simply recall it.
- Show the different ways to solve the same problem and encourage the students to come up with theirown creative ways to solve them.
- Discuss how every concept can be applied to the real world - and when that's possible it helps improve the students understanding.

Module-1

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, Construction Chemicals. (Properties and uses of different material to be discussed)

Structural Elements of a building: foundation, plinth, lintel, Sunshade, Masonry wall, column, beam, slab and staircase (Activity for students: exposed for modelling of building components)

08 Hours

Module-2

Statics: Fundamentals of Mechanics, concept of Idealization and Law of Mechanics. System of forces, principles of superposition and transmissibility, Concurrent Forces: Resolution and composition of forces, Law of Parallelogram of forces, Law of triangle of forces, Lami's theorem and Law of polygon of forces to determine the resultant of concurrent. Equilibrium and equations of Concurrent forces. (An experiment to be made with respect of Law of parallelogram of forces)

08 Hours

Module-3

Non concurrent Forces: Moment of forces, couple, Varignon's theorem, free body diagram, equations of equilibrium, equilibrium of concurrent and non-concurrent coplanar force systems (Applied Problems such as forces acting on a wrench, Aero-plane, Different varieties of Beams, Booms, etc.,.   0**8 Hours**

Module-4		

Centroid: Importance of centroid and center of gravity, methods of determining the centroid, locating the centroid of plane lamina from first principles, 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, section modulus, radius of gyration, moment of inertia of built-up sections, Numerical Examples.(Application of problems in Microsoft excel)

08 Hours

Module-5		

Kinematics : Displacement, average velocity, instantaneous velocity, speed, acceleration, average acceleration, variable acceleration, acceleration due to gravity, Newton's law of motion, rectilinear motion and numerical problems, curvilinear motion, super elevation, projectile motion, relative motion, numerical problems, motion under gravity, numerical problems

Kinetics: D 'Alemberts Principle and its application in plane motion and connected bodies

08 Hours

Teaching-Learning Process for all modules	Chalk and Talk, PowerPoint presentation, flip teaching, YouTube videos

Course Outcomes

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

1. Understand the objectives of various disciplines of civil engineering and the importance of building material
2. To learn the effect of force, moment and coupling on rigid body.
3. Visualize the concept of Centroid and moment of inertia for different shapes
4. Understand basic concepts dynamics – force, momentum, work, energy.and its application

Assessment Details (both CIE and SEE)

Component	Type of Assessment	Max. Marks	Total	Reduced Marks	Total
CIE-Theory	CIE-1	25	100	50	50
	CIE-2	25			
	AAT-1	25			
	AAT-2	25			
SEE	End Exam	100		50	50
Grand Total				100	

Suggested Learning Resources:

Text Books:

    1. I B Prasad, Engineering Mechanics Statics and Dynamics, Khanna Publishers

    2. Nelson , Engineering Mechanics Statics and Dynamics, Tata Mc-Graw Hill

    Education Private Limited

    3. J. L. Meriam, L. G. Kraige, et al. Engineering Mechanics –Statics and Dynamics,

    Wiley

Reference Books:
1. R. C. Hibbbler, Engineering Mechanics: Principles of Statics and Dynamics, Pearson Press.
2. Bansal R. K., A Text Book of Engineering Mechanics, Laxmi Publications.
3. Andy Ruina and Rudra Pratap, Introducing to Statics and Dynamics, Oxford University Press.
4. Reddy Vijay Kumar K and K Suresh Kumar, Engineering Mechanics.
5. F.P. Beer and E. R. Johnston, Mechanics for Engineers, Statics and Dynamics, McGraw Hill.
6. Irving H. Shames, Engineering Mechanics, Prentice Hall.

E-Resources:

- **https://edurev.in/courses/24561_Engineering-Mechanics**
- **https://www.real-world-physics-problems.com/engineering-mechanics**
  problems.html#kinematics_curvilinear_normal_tangential
- **https://www.iitg.ac.in/rkbc/me101/Presentation/L01-03.pdf**
- **https://archive.nptel.ac.in/courses/112/106/112106286/**

CO- PO Mapping :

POS COs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO1 0	PO1 1	PO1 2	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	
CO	1.7 5	3	1									1	1	2	

Course Name – Waste Management			
Course Code	**23ETC 15F/25F**	**CIE Marks**	**50**
Teaching Hours/Week : 3: 0: 0: 0	**Credits: 3**	**SEE Marks**	**50**
Total Hours of Pedagogy	**40 hours Theory**	**Total Marks**	**100**
Credits	**03**	**Exam Hours**	**03**

Course objectives:

This course will enable students to:

Understand the different types of waste.

Analyze different collection, storage, handling, transportation, and disposal facilities to different types of waste.

Study the scenario of waste management in India.

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

Module-1
08 Hours

Introduction to the Wastes Management

Definition of waste, classification of waste based on their physical, bio – degradability, effect of waste on human health, different sources of waste, need of waste management.

Municipal Solid Waste Management

Composition, quantity of municipal solid waste and its generation, collection and transportation of municipal solid waste, separation for recycling, reuse of plastics, paper and glass from municipal solid waste, disposal of municipal solid waste. Solid waste management rules 2016.

Module-2
08 Hours

Industrial Solid Waste Management

Classification of industrial solid waste, and extent of generation of these wastes in India, storage, transportation, and disposal of industrial solid waste. Existing laws to regulate and control the disposal of solid waste in India. Impacts of improper disposal of solid waste on human health and environment.

Module-3
08 Hours

Biomedical Waste Management

Colour coding of biomedical waste and their collection in different coloured bins or bags, collection of sharp waste, labeling and identification of biomedical waste, storage, transportation, treatment and disposal of biomedical waste. Impacts of improper disposal of biomedical on human health and environment. Biomedical waste management rules 2016. Legislative laws on management of biomedical waste in India.

Module-4

	08 Hours

Radioactive Wastes Management
Sources of radio activity from the environment. Classification of radioactive wastes, packaging, labelling, transportation and storage of radioactive materials. Disposal of nuclear waste in India. Impact of radioactivity on biological environment. Case study on nuclear and radiation accidents. Atomic energy (Safe disposal of radioactive wastes) rules, GSR – 125.

Module-5

	08 Hours

E Wastes and Hazardous Management
Definition of E waste, sources of generation of E waste, storage, transportation, and disposal of E waste. Adverse Health and environmental impacts of E waste.

Definition of hazardous waste, sources of generation, storage, transportation and disposal of hazardous waste, Impacts of improper disposal of hazardous waste on human health and environment. E – Waste management rules 2022. Legislative laws on management of hazardous and E - waste in India.

Teaching-Learning Process for all modules	**Chalk and Talk, PowerPoint presentation, flip teaching, YouTube videos**

Course Outcomes
At the end of the course the student will be able to :
1. Categorize the different types of waste and identify their impact on human health and environment.
2. Suggest suitable collection, storage, handling, transport and disposal facilities to different categories of waste.
3. Recognize the need of waste management towards sustainable development.
4. Recommend suitable control measures to the improper waste management in concern to public health and safety.
5. Comprehend different rules, laws and legislation on management of different types of waste.

Assessment Details (both CIE and SEE)

Component	Type of Assessment	Max. Marks	Total	Reduced Marks	Total
CIE-Theory	**CIE-1**	25	100	50	50
	CIE-2	25			
	AAT-1	25			
	AAT-2	25			
SEE	End Exam	100		50	50
Grand Total				100	

Suggested Learning Resources:

Text Books:
1. B Tabassum, Priya Bajaj, Pawan Kumar, Bharathi, "Waste Management and Environmental health", Discovery publishing house pvt Ltd, ISBN: 9350567776.
2. Syed E Hasan, "Introduction to Waste Management", Willey Pubishers, ISBN: 978-1-119 43393-4.
3. S. K Garg, "Sewage Waste Disposal and Air Pollution Engineering", Khanna Publishers, 9788174092304.
4. Tchobaanoglous, G., Theisen, H., and Samuel A Vigil, Integrated Solid Waste Management, McGraw-Hill Publishers, 1993.
5. Bilitewski B., Hard He G., Marek K., Weissbach A., and Boeddicker H., Waste Management, Springer, 1994.

Reference Books:

1. White, F. R., Franke P. R., & Hindle M., Integrated solid waste management: a life cycle inventory. McDougall,P. John Wiley & Sons. 2001

2. Nicholas, P., & Cheremisinoff, P. D., Handbook of solid waste management and waste minimization technologies, Imprint of Elsevier Science. 2005

E-Resources:

https://www.youtube.com/watcE

https://archive.nptel.ac.in/cours/

CO- PO Mapping :

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	PS O1	PS O2	PS O3
CO1						3	2	1				3		2	
CO2						3		2				3		3	
CO3						2	3					3		3	
CO4						3		3				3		3	
CO5						2	2	3				3			3

Level 3- Highly Mapped, Level 2-Moderately Mapped, Level 1-Low Mapped, Level 0- Not Mapped

Course Name	Communicative English		
Course Code:	23ENG16/26	CIE Marks	50
Teaching Hours/Week (L: T: P: S) (1:0:0:0)	Credits (1:0:0:0)	SEE Marks	50
Total Hours of Pedagogy	24 hours Theory	Total Marks	100
Credits	01	Exam Hours	01

Course objectives:

This course will enable students to:

1. To know about Fundamentals of Communicative English and Communication Skills in general.
2. Understanding how to connect and communicate when meeting for the first time. & English grammar and essentials of important language skills.
3. How to describe self & how to case interests & hobbies. Learning the Usage of Adjectives, Adverbs, Articles Tense: Continuous Tenses
4. Understanding/ learning to describe things & others. incorporating Grammar in communication
5. Improving Communication & Presentation skills & eliminating MTI.

Teaching-Learning Process (General Instructions)

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

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

Teaching –Learning more effectively: Teachers shall adopt suitable pedagogy for an effective teaching-learning process. The pedagogy shall involve the combination of different methodologies that suit modern technological tools and software 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 LSRW skills.

Apart from conventional lecture methods, various types of innovative teaching techniques through videos, and 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**.**

Module-1	5 hours

Introduction to Communicative English:

Introduction, Language as a Tool, Fundamentals of Communicative English, Process of Communication, Barriers to Effective Communicative English, Different styles and levels in Communicative English (Communication Channels). Interpersonal and Intrapersonal Communication Skills, How to Improve and Develop Interpersonal and Intrapersonal Communication Skills.

Module-2	05 hours

Speaking activity:

Social graces, Greeting, Self-introduction, introducing others Asking for and Giving Information.
Grammar and Vocabulary in Use: Parts of Speech, Nouns, Pronouns Articles, Asking questions.
(WH, Aux Verbs)

Module-3	04 Hours

Speaking activity

Speaking about Routine, Hobbies, Likes and Dislikes

Grammar and Vocabulary in Use: Verb= Main / Assistant, Forms of Verbs, Tense: Simple present tense,
Writing exercises: Subject Verb Agreement, Positive and Negative sentences, Question tags

Module-4	05 Hours

Basic English Communicative Grammar and Vocabulary PART - II:
Word 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.

Module-5	05 Hours

Communication Skills for Employment:

Information Transfer: Oral Presentation - Examples and Practice. Extempore / Public Speaking, Difference between Extempore / Public Speaking, Communication Guidelines for Practice. Mother Tongue Influence (MTI) – Various Techniques for Neutralization of Mother Tongue Influence – Exercises.

Teaching-learning process for all modules	Chalk and Talk, PowerPoint presentation, flip teaching, YouTube videos

Course Outcomes

At the end of the course, the student will be able to :
5. Understand and apply the Fundamentals of Communication Skills in their communication skills.
6. Identify the nuances of phonetics, and intonation and enhance pronunciation skills.
7. To impart basic English grammar and essentials of language skills as per present requirement.
8. Understand and use all types of English vocabulary and language proficiency.
9. Adopt the Techniques of Information Transfer through the presentation.

Assessment Details (both CIE and SEE)

Component		Weightage (%)	
IAT 1	**25**	Scaled to 15	60%
IAT 2	**25**		
CCE 1	**25**	Scaled to 10	40%
CCE 2	**25**		

Suggested Learning Resources:

Text Books:
1. Communication Skills by Sanjay Kumar & Pushp Lata, Oxford University Press India Pvt Ltd - 2019.
2. A Textbook of English Language Communication Skills, (ISBN-978-81-955465-2-7), Published by Infinite
3. Learning Solutions, Bengaluru - 2022.

Reference Books:
1. Technical Communication by Gajendra Singh Chauhan and Et al, (ISBN-978-93-5350-050-4), Cengage learning India Pvt Limited [Latest Revised Edition] - 2019.
2. English for Engineers by N.P.Sudharshana and C.Savitha, Cambridge University Press – 2018.
3. English Language Communication Skills – Lab Manual cum Workbook, Cengage learning India Pvt Limited. [Latest Revised Edition] – (ISBN-978-93-86668-45-5), 2019.
4. A Course in Technical English – D Praveen Sam, KN Shoba, Cambridge University Press – 2020.
5. Practical English Usage by Michael Swan, Oxford University Press – 2016

CO- PO Mapping:

POS COs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO1 0	PO1 1	PO1 2	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	-	-	-

Course Title:	సాంస్కృతిక కನ್ನడ		
Course Code:	**23KSK17 /27**	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

సాంస్కృతిక కನ್ನడ కಲಿಕೆయ ఉದ್ದೇಶగళు:

1. వృత్తిపర పదవి విద్యార్థిగళిగె కನ್ನడ భాషె సాహిత్య మత్తు సంస్కృతియ పరిచయ మాడికొడువుదు

2. కನ್ನడ సాహిత్యద ప్రధాన భాగవాద ఆధునిక మత్తు ఆధునిక పూర్వ కావ్యగళన్ను పరిచయ మాడికొడువుదు

3. తాంత్రిక వృత్తిగళ హాగూ సాహితిగళ పరిచయ హాగూ అవరు సాధిసిద విషయగళన్ను పరిచయిసువుదు

4. కನ್ನడ శబ్ద సంపత్తిన పరిచయ మత్తు కನ್ನడ భాషెయ బళకె హాగూ కನ್ನడదల్లి పత్ర వ్యవహారవన్ను తిళిసికొడువుదు

బోధనె మత్తు కలికా వ్యవస్థె (Teaching-Learning Process - General Instructions) :

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

1. సాంస్కృతిక కನ್ನడవన్ను బోధిసలు తరగతియల్లి శిక్షకరు ప్రస్తుత పుస్తక ఆధారిసి బ్లాక్ బోర్డ్ విధానవన్ను అనుసరిసువుదు. ప్రముఖ అంశగళ చార్ట్ గళన్ను తయారిసలు విద్యార్థిగళన్ను ప్రేరేపిసువుదు మత్తు తరగతియల్లి అవుగళన్ను చర్చిసలు అవకాశ మాడికొడువుదు.

2. ఇత్తీచిన తంత్రజ్ఞానద అనుకూలగళన్ను బళసికొళ్ళువుదు - అందరె కవి-కావ్య పరిచయదల్లి కవిగళ చిత్రణ మత్తు లేఖనగళు మత్తు కథ కావ్యగళ మూల అంశగళిగె సంబంధపట్ట ధ్వని చిత్రగళు, సంభాషణెగళు, ఈగాగలే ఇతర విమర్శకరు బరెదిరువ విమర్శాత్మక విషయగళన్ను టిపిటి, డిజిటల్ మాధ్యమగళ ముఖాంతర విశ్లేషిసువుదు.

3. నవీన మాదరియ సాహిత్య బోధనెగె సంబంధపట్ట విధానగళన్ను శిక్షకరు విద్యార్థిగళిగె అనుకూలవాగువ రీతియల్లి అళవడిసికొళ్ళబహుదు.

ఘటక-1: లేఖనగళు

కర్నాటక సంస్కృతి: హం. ప. నాగరాజయ్య

కర్నాటకద ఏకీకరణ: ఒందు అపూర్వ చరిత్రె- జి. వెంకట సుబ్బయ్య

ఆడళిత భాషెయాగి కನ್ನడ: డా. ఎల్. తిమ్మేశ మత్తు ప్రో వి. కేశవమూర్తి

ఘటక-2: ఆధునిక పూర్వ కావ్య భాగ

వచనగళు: బసవణ్ణ, అక్కమహాదేవి, అల్లమప్రభు, ఆయ్దక్కి మారయ్య, జేదర దాసిమయ్య, ఆయ్దక్కి లక్కమ్మ

కీర్తనెగళు: అదరిందేను ఫల- పురందరదాసరు

తల్లణిసదిరు కండ్య- కనకదాసరు

తత్త్వపదగళు: సావిర కొడగళ సుట్టు -శిశునాళ శరీఫ

ఘటక-3: ఆధునిక కావ్య భాగ

డివిజి అవర మంకుతిమ్మన కగ్గ ఆయుద కెలవు భాగగళు

కురుడు కాంచాణ-ద. రా. బేంద్రె

ಹೊಸಬಾಳಿನ ಗೀತೆ- ಕುವೆಂಪು	
ಘಟಕ-4 ತಾಂತ್ರಿಕ ವ್ಯಕ್ತಿಗಳ ಪರಿಚಯ	

ಡಾ. ಎಂ. ವಿಶ್ವೇಶ್ವರಯ್ಯ ವ್ಯಕ್ತಿ ಮತ್ತು ಐಪಿಸಿಯ ಇತಿಹ್ಯ- ಎ.ಎನ್. ಮೂರ್ತಿರಾವ್

ಕರಕುಶಲ ಕಲೆಗಳು ಮತ್ತು ಪರಂಪರೆಯ ವಿಜ್ಞಾನ- ಕರಿಗೌಡ ಬೀಚಿನಹಳ್ಳಿ

ಘಟಕ-5 ಕಥೆ ಮತ್ತು ಪ್ರವಾಸ ಕಥನ

ಯುಗಾದಿ- ವಸುಧೇಂದ್ರ

ಪರ್ವತ ಮೇಘಾನೆ ಎಂಬ ಗಿರಿಜನ ಪರ್ವತ- ಹಿ. ಚಿ. ಬೋರಲಿಂಗಯ್ಯ

ಪಠ್ಯಪುಸ್ತಕ :

ಸಾಂಸ್ಕೃತಿಕ ಕನ್ನಡ

ಡಾ. ಹಿ.ಚಿ.ಬೋರಲಿಂಗಯ್ಯ ಮತ್ತು ಡಾ. ಎಲ್. ತಿಮ್ಮೇಶ,
ಪ್ರಸಾರಾಂಗ, ವಿಶ್ವೇಶ್ವರಯ್ಯ ತಾಂತ್ರಿಕ ವಿಶ್ವವಿದ್ಯಾಲಯ, ಬೆಳಗಾವಿ.

COURSE EVALUATION SCHEME:

Component		Weightage (%)		
IAT-1	Internal Tests	25	25	50
IAT-2		25		
CCE-1	Internal Assignments	25	25	
CCE-2		25		
				SEE- 100 : Reduced to 50
				Total : CIE+ SEE= 100

ಸಾಂಸ್ಕೃತಿಕ ಕನ್ನಡ ಕಲಿಕೆಯ ಉದ್ದೇಶಗಳು

CO1	ಕನ್ನಡ ಭಾಷೆ, ಸಾಹಿತ್ಯ, ಸಂಸ್ಕೃತಿಯ ಪರಿಚಯ
CO2	ಕನ್ನಡದ ಆಧುನಿಕ ಸಾಹಿತ್ಯ ಹಾಗು ಆಧುನಿಕ ಪೂರ್ವ ಸಾಹಿತ್ಯ ಪರಿಚಯ
CO3	ಸಾಹಿತಿಗಳ, ಕವಿಗಳ ಹಾಗು ತಾಂತ್ರಿಕ ವ್ಯಕ್ತಿಗಳ ಪರಿಚಯ
CO4	ಆಡಳಿತ ಭಾಷೆಯ ಪದಗಳ ಪರಿಚಯ ಹಾಗು ಕಥೆಗಳ ಬಗ್ಗೆ ಆಸಕ್ತಿ

COs and POs Mapping

POS \ COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C107.1									3	2		
C107.2									3	2		
C107.3								2	3	2		
C107.4									3	2		1

ಬಳಕೆ ಕನ್ನಡ BaLake Kannada (Kannada for Usage)			
ಕನ್ನಡ ಕಲಿಕೆಗಾಗಿ ನಿಗದಿಪಡಿಸಿದ ಪಠ್ಯಪುಸ್ತಕ - (Prescribed Textbook to Learn Kannada)			
ವಿಷಯ ಸಂಕೇತ (Course Code)	23KBK17/27	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)	2 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)

Theory Courses : 1 Credit

Evaluation Type		Component	Max. Marks	Marks reduced to	Min. Marks	Evaluation Details
Theory Component	Internal Assessment Tests (IAT)	IAT-1	25	25	**20**	Average of two IAT's Scaled down to 25 marks
		IAT-2	25			
	Comprehensive Continuous Evaluation(CCE)	CCE-1	25	25		Minimum of two Assessment methods as per 22OB4.2 of regulation, Average of two CCE's scaled down to 25 marks
		CCE-2	25			
	Total CIE - Theory			**50**	**20**	Scale down marks of IAT and CCE to 50
	Total CIE – (Theory + Lab)			**50**	**20**	
	SEE (MCQ Type)		100	**50**	**18**	MCQ Type Question paper of 50 questions. Examination duration is 2 hours.
	CIE + SEE			**100**	**40**	

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 02 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	-	-	-	-	-

I/II Semester

INNOVATION AND DESIGN THINKING

Course Code	L:T:P: S	CIE Marks	SEE Marks	Total Marks	Exam Hours
23IDT18/28	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 model design.

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.

Scheme of Evaluation

Continuous Internal Evaluation (CIE) :

IAT-1 at the end of 8th Week	-	25 marks
IAT-2 at the end of 13th Week	-	25 marks
CCE-1 at the end of 4thWeek	-	25 marks
CCE-2 at the end of 9thWeek		25 marks
Total		100 Marks

The average of two IAT1 scaled down to 25 marks and average of two CCE's scaled down to25 marks shall be considered as CIE marks of the course

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/

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	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,   Level2-ModeratelyMapped,Level 1-Low Mapped, Level 0- Not Mapped