BMS INSTITUTE OF TECHNOLOGY AND MANAGEMENT

(Autonomous Institution Affiliated to VTU, Belagavi)
Scheme of Teaching and Examinations-2022
Outcome-Based Education (OBE)and Choice Based Credit System (CBCS)
(Effective from the academic year 2022-23)

II Semester (CSE Stream)　　　　　**Dept ISE**　　　　　**(Physics Cycle)**

Sl. No	Course and 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)	BMATS201	Mathematics for CSE Stream -II	Maths	2	2	2	0	03	50	50	100		04
2	#ASC(IC)	BPHYS202	Physics for CSE Stream	Physics	2	2	2	0	03	50	50	100		04
3	ESC	BPOPS203	Principles of Programming Using C	CSE	2	0	2	0	03	50	50	100		03
4	ESC-II	BESCK204D	Introduction to Mechanical Engineering	Respective Engg Dept	3	0	0	0	03	50	50	100		03
5	ETC-II	BETCK205H	Introduction to Internet of Things (IoT)	Any Dept	3	0	0	0	03	50	50	100		03
6	AEC	BPWSK206	Professional Writing Skills in English	Humanities	1	0	0	0	01	50	50	100		01
7	HSMC	BKSKK207/ BKBKK207	Samskrutika Kannada/ Balake Kannada	Humanities	1	0	0	0	01	50	50	100		01
8	AEC/SDC	KIDTK258	Innovation and Design Thinking	Any Dept	0	2	0	0	02	50	50	100		01
				TOTAL	**14**	**6**	**6**	**0**	**19**	**400**	**400**	**800**		**20**

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

*-BMATS201 Shall have the 03 hours of theory examination(SEE), however, practical sessions question shall be included in the theory question papers. **** The mathematics subject should be taught by a single faculty member per division, with no sharing of the course(subject)module-wise by different faculty members.**

#-BPHYS202 SEE shall have the 03 hours of theory examination and 02-03 hours of practical examination

ESC or ETC of 03 credits Courses shall have only a theory component (L:T :P:S=3:0:0:0) or **if the nature of the of course required experimental learning syllabus shall be designed as an Integrated course (L:T:P:S= 2:0:2:0).All 01 Credit-** courses shall have the SEE of 01 hours duration and the pattern of the question paper shall be MCQ

(ESC-II) Engineering Science Courses-II					(ETC-II) Emerging Technology Courses-II				
Code	Title	L	T	P	Code	Title	L	T	P
BESCK204A	Introduction to Civil Engineering	3	0	0	BETCK205A	Smart materials and Systems	3	0	0
BESCK204B	Introduction to Electrical Engineering	3	0	0	BETCK205B	Green Buildings	3	0	0
BESCK204C	Introduction to Electronics Engineering	3	0	0	BETCK205C	Introduction to Nano Technology	3	0	0
BESCK204D	Introduction to Mechanical Engineering	3	0	0	BETCK205D	Introduction to Sustainable Engineering	3	0	0
BESCK204E	Introduction to C Programming	2	0	2	BETCK205E	Renewable Energy Sources	3	0	0
					BETCK205F	Waste Management	3	0	0
					BETCK205G	Emerging Applications of Biosensors	3	0	0
					BETCK205H	Introduction to Internet of Things (IoT)	3	0	0
					BETCK205I	Introduction to Cyber Security	3	0	0
					BETCK205J	Introduction to Embedded System	3	0	0
(PLC-II) Programming Language Courses-II									
Code	Title	L	T	P					
BPLCK205A	Introduction to Web Programming	2	0	2					
BPLCK205B	Introduction to Python Programming	2	0	2					
BPLCK205C	Basics of JAVA programming	2	0	2					
BPLCK205D	Introduction to C++ Programming	2	0	2					
The course BESCK104E/204E, Introduction to C Programming, and all courses under PLC and ETC groups can be taught by ANY DEPARTMENT									

- The student has to select one course from the ESC-II group.
- Civil Engineering Students shall opt for any one of the courses from the ESC-II group **except, BESCK204E-Introduction to C Programming**
- The students have to opt for the courses from ESC group without repeating the course in either 1st or 2nd semester
- The students must select one course from either ETC-II or PLC-II group.
- If students study the subject from ETC-I in 1st semester he/she has to select the course from PLC-II in the 2nd semester and vice-versa

BMS Institute of Technology & Management

(An Autonomous Institute under VTU, Belagavi, Karnataka - 590018)
Avalahalli, Doddaballapur Main Road, Bengaluru – 560064

Course Title:	**Mathematics for CSE Stream - II**			
Course Code:		**BMATS201**	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	Exam Hours	03
Total Hours of Pedagogy		40 hours Theory + 10-12 Lab slots	Credits	04

Course objectives: The goal of the course **Mathematics for CSE Stream - II** (**BMATS201**) is to

- **Familiarize** the importance of Integral Calculus and Vector Calculus.
- **Learn** vector spaces and linear transformations**.**
- **Develop** the knowledge of numerical methods and apply them to solve transcendental and differential equations.

Teaching-Learning Process

Pedagogy (General Instructions):

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

1. In addition to the traditional lecture method, different types of innovative teaching methodsmay 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 to 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 Integral Calculus (8 hours)

Introduction to Integral Calculus in Computer Science & Engineering.

Multiple Integrals: Evaluation of double and triple integrals, evaluation of double integrals by change of order of integration, changing into polar coordinates. Applications to find Area and Volume by double integral. Problems.

Beta and Gamma functions: Definitions, properties, relation between Beta and Gamma functions. Problems.

Self-Study: Centre of gravity, Duplication formula.

Applications: Antenna and wave propagation, Calculation of optimum value in various geometries. Analysis of probabilistic models.

(RBT Levels: L1, L2 and L3)

Module - 2 Vector Calculus (8 hours)

Introduction to Vector Calculus in Computer Science & Engineering.

Scalar and vector fields. Gradient, directional derivative, curl and divergence - physical interpretation, solenoidal and irrotational vector fields. Problems.

Curvilinear coordinates: Scale factors, base vectors, Cylindrical polar coordinates, Spherical polar coordinates, transformation between cartesian and curvilinear systems, orthogonality. Problems.

Self-Study: Vector integration and Vector line integral.

Applications: Conservation of laws, Electrostatics, Analysis of streamlines.

(RBT Levels: L1, L2 and L3)

Module - 3 Vector Space and Linear Transformations (8 hours)

Importance of Vector Space and Linear Transformations in the field of Computer Science & Engineering.

Vector spaces: Definition and examples, subspace, linear span, Linearly independent and dependentsets, Basis and dimension. Problems.

Linear transformations: Definition and examples, Algebra of transformations, Matrix of a linear transformation. Change of coordinates, Rank and nullity of a linear operator, rank-nullity theorem.Inner product spaces and orthogonality. Problems.

Self-study: Angles and Projections, Rotation, Reflection, Contraction and Expansion.

Applications: Image processing, AI & ML, Graphs and networks, Computer graphics.

(RBT Levels: L1, L2 and L3)

Module - 4 Numerical Methods -1 (8 hours)

Importance of numerical methods for discrete data in the field of computer science &engineering.

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

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

Numerical integration: Trapezoidal, Simpson's $(1/3)^{rd}$ and $(3/8)^{th}$ rules (without proof). Problems.

Self-Study: Bisection method, Lagrange's inverse Interpolation.

Applications: Estimating the approximate roots, extremum values, Area, volume, and surface area. Errors

in finite precision.
(RBT Levels: L1, L2 and L3)

Module - 5 Numerical Methods -2 (8 hours)

Introduction to various numerical techniques for handling Computer Science & Engineering applications.

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

Self-Study: Adams-Bashforth method.
Applications: Estimating the approximate solutions of ODE.
(RBT Levels: L1, L2 and L3).

List of Laboratory experiments (2 hours/week per batch/ batch strength 15)

10 lab sessions + 1 repetition class + 1 Lab Assessment

1	Program to compute area, surface area, volume and centre of gravity
2	Evaluation of improper integrals
3	Finding gradient, divergent, curl and their geometrical interpretation
4	Computation of basis and dimension for a vector space and Graphical representation of linear transformation
5	Computing the inner product and orthogonality
6	Solution of algebraic and transcendental equations by Ramanujan's, Regula-Falsi and Newton-Raphson methods
7	Interpolation/Extrapolation using Newton's forward and backward difference formulae
8	Computation of area under the curve using Trapezoidal, Simpson's $(1/3)^{rd}$ and $(3/8)^{th}$ rules
9	Solution of ODE of first order and first degree by Taylor's series and Modified Euler's methods
10	Solution of ODE of first order and first degree by Runge-Kutta 4th order and Milne's predictor-corrector methods

Suggested software's: MATHEMATICA/ MATLAB /PYTHON/ SCILAB

Course outcome (Course Skill Set)
At the end of the course the student will be able to:

CO1	Apply the concept of change of order of integration and variables to evaluate multiple integrals and their usage in computing area and volume.
CO2	Understand the applications of vector calculus refer to solenoidal, and irrotational vectors. Orthogonal curvilinear coordinates.
CO3	Demonstrate the idea of Linear dependence and independence of sets in the vector space, and linear transformation
CO4	Apply the knowledge of numerical methods in analysing the discrete data and solving the physical and engineering problems.
CO5	Get familiarize with modern mathematical tools namely MATHEMATICA/ MATLAB /PYTHON/ SCILAB

Suggested Learning Resources:

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

Text Books

1. **B. S. Grewal**: "Higher Engineering Mathematics", Khanna Publishers, 44th Ed., 2021.
2. **E. Kreyszig**: "Advanced Engineering Mathematics", John Wiley & Sons, 10th Ed., 2018.

Reference Books

1. **V. Ramana:** "Higher Engineering Mathematics", McGraw Hill Education, 11th Ed., 2017
2. **Srimanta Pal & Subodh C.Bhunia**: "Engineering Mathematics", Oxford University Press, 3rd Ed., 2016.
3. **N.P Bali and Manish Goyal**: "A Textbook of Engineering Mathematics", Laxmi Publications, 10th Ed., 2022.
4. **C. Ray Wylie, Louis C. Barrett:** "Advanced Engineering Mathematics", McGraw Hill Book Co., New York, 6th Ed., 2017.
5. **Gupta C.B, Sing S.R and Mukesh Kumar:** "Engineering Mathematic for Semester I and II", McGraw 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, 7thEd., 2019.
8. **David C Lay:** "Linear Algebra and its Applications", Pearson Publishers, 4th Ed., 2018.
9. **Gareth Williams:** "Linear Algebra with applications", Jones Bartlett Publishers Inc., 6th Ed., 2017.
10. **Gilbert Strang:** "Linear Algebra and its Applications", Cengage Publications, 4th Ed., 2022.

Web links and Video Lectures (e-Resources):

- http://nptel.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
- Seminar

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

COs	POs						
	1	**2**	**3**	**4**	**5**	**6**	**7**
CO1	3	2					
CO2	3	2					
CO3	3	2					
CO4	3	2					
CO5					3		

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

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DEPARTMENT OF PHYSICS
Choice Based Credit System (CBCS)
SEMESTER - II

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DEPARTMENT OF PHYSICS Choice Based Credit System (CBCS) SEMESTER - II				
PHYSICS FOR CSE STREAM (2:2:2) 4 (SPECIFIC TO CSE STREAM BRANCHES) (Effective from the academic year 2022 -2023)				
Course Code	BPHYS 202		**CIE Marks**	50
Teaching Hours/Week (L:T:P:S)	2:2:2		**SEE Marks**	50
Total Number of contact Hours Theory/lab sessions	40 hrs./12 lab sessions		**Exam Hours**	3
Course type	Integrated		**Credit**	4

Course Objectives:
This course will enable students to:
- Identify the fundamental concepts related to conductivity in materials and photonics, theory of quantum mechanics and Quantum computing.
- Elucidate the significance of principles of quantum mechanics in quantum computing.
- Apply the knowledge in solving the problems on photonics, conductivity, and quantum mechanics.
- Study the essentials of physics for computational aspects like design and data analysis.
- Apply the concepts required for the measurement of physical parameters related to engineering.
- Demonstrate and construct the electrical and optical experiments.
- Compare and analyze the results of the experiments.
- Build simple experimental set up and estimate the physical parameters related to engineering.

Preamble: Introduction to photonics, Quantum Mechanics, Superconductivity, Quantum computation, Physics of animation.

Module – 1

Laser and Optical Fibers

Self-study topics: Properties of light, basic principle of laser, data storage and CD writing, total internal reflection, optical fibre - construction, optical fibre sensors.

LASER: Introduction, Interaction of Radiation with Matter, Einstein's A and B Coefficients, expression for energy density of the radiation in terms of Einstein's Coefficients, condition for Laser Action: Population Inversion, Metastable State, Requisites of a laser system, construction and working of Semiconductor Diode Laser, Applications: Bar code scanner, Laser Printer, Numerical Problems.

Optical Fiber: Propagation mechanism, Acceptance angle, Numerical Aperture (derivation), condition for ray propagation, Classification of Optical Fibers, Attenuation and causes for attenuation and expression attenuation coefficient, Applications: Fiber Optic networking, Fiber Optic Communication. Numerical Problems.

(8 Hours)

Module – 2

Quantum Mechanics
Self-study topics: de Broglie Hypothesis, wave-particle dualism.

Introduction, Matter Waves, de Broglie wavelength and derivation of expression by analogy, representation of matter waves: Phase Velocity and Group Velocity(qualitative), Heisenberg's Uncertainty Principle and its significance, Application: Non-existence of electron inside the nucleus (Relativistic condition), Principle of Complementarity, Wave Function and its properties, Schrodinger wave equation: Time independent Schrodinger wave equation (derivation) and time dependent equation, Physical Significance of a wave function and Born's Interpretation, Expectation value, Eigen functions and Eigen Values, Applications of Schrodinger wave equation: Eigen Values and Eigen functions of a particle in a one dimensional potential well of infinite depth and extend to a free particle case. Waveforms and Probabilities and its mapping. Numerical Problems.

(8 Hours)

Module – 3

Quantum Computing

Self-study topics: Basics of quantum mechanics, Matrices.

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, quantum superposition and the concept of qubit. Classical & quantum information comparison. Differences between classical & quantum computing.

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.

(8 Hours)

Module – 4

Application of Physics in computing

Self-study topics: Motion in one dimension, Frames, Frames per second.

Physics of Animation: Taxonomy of physics-based animation methods, Frames, Frames per Second, Size and Scale, Motion and Timing in Animations, Constant Force and Acceleration, The Odd rule, Motion Graphs, Numerical Calculations based on Odd Rule, Examples of Character Animation: Jumping, Walking. Numerical Problems.

Statistical Physics for Computing: Descriptive statistics and inferential statistics, Poisson distribution and Normal Distributions (Bell Curves), Monte Carlo Method. Numerical Problems.

(8 Hours)

Module – 5

Superconductivity and its applications

Self-study topics: Electrical Conductivity in metals, Resistivity and Mobility, Matheissen's rule.
Introduction to Super Conductors, properties of superconductors: Meissner Effect, Critical Current,

critical temperature and critical field. Temperature dependence of Critical field, Types of Super Conductors, Concept of Phonon, BCS theory (Qualitative), superconducting Tunneling, High Temperature superconductivity, Josephson Junction, DC and AC SQUIDs (Qualitative), Applications in Quantum Computing. Numerical Problems.

(8 Hours)

Laboratory Component

(10 experiments have to be completed from the list of experiments)

Title of the experiment
1. Transistor Characteristics
2. Photo-Diode Characteristics
3. Magnetic Field at any point along the axis of a circular coil
4. Fermi Energy
5. Four Probe Method
6. Black Box
7. Energy gap of a given semiconductor
8. Plank's Constant using LEDs
9. Wavelength of LASER using Grating
10. Numerical Aperture using optical fiber
11. Charging and Discharging of a Capacitor
12. Series & Parallel LCR
13. GNU Step Interactive Simulations.
14. Study of motion using spread Sheets
15. Application of Statistic using Spread Sheets
16. PHET Interactive Simulations
17. Design a LCR series or parallel circuits. (To determine different resonant frequency)
18 Design a circuit to determination of Wavelength of LEDs using Planck's law.

Course outcomes (CO s):

At the end of the course the student will be able to:
CO1: Apply the principles of Lasers and Optical fibres in engineering applications.
CO2: Apply the basic principles of the quantum Mechanics and its application in Quantum Computing.
CO3: Analyse significant properties of superconductors and its different applications in engineering.
CO4: Illustrate the application of physics in design and data analysis in animation.
CO5: Practice working in groups to conduct experiments in physics and perform precise and honest measurement.

books: Suggested Learning Resources(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, Arthur Beiser, 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. 14.11.2022 4
8. Engineering Physics, S P Basavaraj, 2005 Edition,

9. Physics for Animators, Michele Bousquet with Alejandro Garcia, CRC Press, Taylor & Francis, 2016.
10. Quantum Computation and Logic: How Quantum Computers Have Inspired Logical Investigations,Maria Luisa Dalla Chiara, Roberto Giuntini, Roberto Leporini, Giuseppe Sergioli, Trendsin Logic, Volume 48, Springer.
11. Statistical Physics: Berkely Physics Course, Volume 5, F. Reif, McGraw Hill.
12. Introduction to Superconductivity, Michael Tinkham, McGraww Hill, INC, II Edition.
13. David Jeffery Griffiths, "Introduction to Electrodynamics", Pearson New International Edition, 4th edition, 2017.
14. Resnick, Walker and Halliday "Principles of Physics, Wiley publisher, 10th edition, 2015.
15. Ben G. Streetman, Sanjay Banerjee, "Solid State Electronic Devices" Pearson Prentice Hall, 6th edition, 2010.
16. S. K. Dwivedi, A Textbook of Engineering Physics, I K International Publishing House Pvt. Ltd., 1st edition 2010.

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
Physics of Animation: https://www.youtube.com/watch?v=kj1kaA_8Fu4
Statistical Physics Simulation:
https://phet.colorado.edu/sims/html/plinkoprobability/latest/plinkoprobability_en.html 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_physics.html https://phet.colorado.edu
https://www.myphysicslab.com

B.E COMPUTER SCIENCE AND ENGINEERING			
Choice Based Credit System (CBCS)			
SEMESTER – II			
Principles of Programming using C (2:0:2)03			
(Effective from the academic year 2022-2023)			
Course Code	**BPOPS203**	CIE Marks	50
Teaching Hours/Week (L:T:P)	2:0:2	SEE Marks	50
Total Number of Contact Hours	32(L) + 14(P)	Exam Hours	03

Course Objectives:

This course will enable students to:

1. Elucidate the basic architecture and functionalities of a Computer
2. Apply programming constructs of C language to solve the real-world 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 structured programming constructs such as functions and procedures

Module – I

Introduction to C: 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.

(6 Hours)

Module – II

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. **(6 Hours)**

Module – III

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.

(8 Hours)

Module – IV

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

(6 Hours)

	Module – V
	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. **(6 Hours)**

List of Laboratory experiments (2 hours/week per batch/ batch strength 36)
12 lab sessions + 3 repetition class + 1 Lab Assessment

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 additionalsurcharge 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.

Course Outcomes:

The students 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 the 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 solutions

CO5: Design and Develop Solutions to problems using modular programming constructs

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Text books:

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

References:

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

DEPARTMENT OF MECHANICAL ENGINEERING			
Choice Based Credit System (CBCS)			
SEMESTER – II			
INTRODUCTION TO MECHANICAL ENGINEERING (3:0:0) 3			
ESC-1 (Common to all Branches)			
(Effective from the academic year 2022-23)			
Course Code	BESCK204D	CIE Marks	50
Teaching Hours/Week (L:T:P)	3:0:0	SEE Marks	50
Total Number of Contact Hours	40	Exam Hours	3

Course Objectives:

This course will enable students to:
1. Identify different sources of energy and their conversion process.
2. Explain the working principle of IC engines, EV's, Hybrid electric vehicles, refrigerator and air conditioner.
3. Recognize various metal joining processes and power transmission elements.
4. Discuss the working of advanced machine tools and automation.
5. Describe the functions of robotics and concepts of IoT.

Module – 1

Preamble: Importance of Mechanical Engineering in the current scenario, impact of Mechanical Engineering on societal and sustainable solutions.

Energy sources: Fossil Fuels: Solid, liquid and gaseous fuels; Solar power: principle of conversion, flat plate collector; wind energy: conversion, wind mill and Hydro power: hydro power station.

Refrigeration and air-conditioner: Refrigerants and its properties, parts of refrigerator, terminology, principle of vapour compression refrigeration, concept of air conditioning, working of room air conditioner.

(8 Hours)

Self- Study: Environmental issues.

Module – 2

Internal Combustion Engines: Parts, terminology**,** working of 4 stroke petrol and diesel engine, comparison between petrol and diesel engine

Electric vehicles (EV) and Hybrid Electric vehicles (HEV): Basic principles of EV and HEV. Components of EV and HEV. Power transmission in EV and HEV.

(7 Hours)

Self- Study: Autonomous vehicles.

Module – 3

Metal Joining Processes: Types of joining processes: Permanent and temporary joining, Soldering: method, types, advantages; Welding: Principle of Arc, TIG and MIG welding.

Power Transmission: Types of belts, Open and cross belt-drives, pulleys and its types; Types of gear drives, advantages and disadvantages of gear drives over belt drives. **Hands on Training:** Soldering, arc, gas, MIG and TIG welding (9 hours) **Self- Study:** Application of drive systems.
Module –4
Computer Numerical Control (CNC) machines: Elements of a CNC system, salient features of CNC controls, advantages and disadvantages of CNC. **Industrial Automation:** Types of automation: Fixed, programmable and flexible automation; basic elements with block diagrams. **Lab Visit:** Demonstration of CNC machine tool. (8 hours) **Self- Study:** 3D printing technologies and applications.
Module - 5
Robotics: Elements of robotic system, type of robotic joints; robotics configuration: polar, cylindrical, cartesian; applications of robots: material handling, process operation and assembly and inspection; advantages and disadvantages of industrial robotics. **Internet of Things (IoT):** Fundamental concept, definition and characteristics, things in IoT, IoT functional blocks and IoT communication models. **Lab Visit:** Demonstration of pick and place robot. (8 hours) **Self- Study:** IoT in industry.

Course Outcomes:
The students will be able to:

CO1:	Summarize various energy conversions, refrigeration system and air conditioners.
CO2:	Describe working principles of power transmission systems and advanced mobility systems.
CO3:	Identify suitable conventional and advanced manufacturing processes for real world applications.
CO4:	Demonstrate ability to work as an individual and a team member to investigate the recent technologies by self-learning.

Textbooks:
1. K. R. Gopalakrishna, "Elements of Mechanical Engineering", Subhas Publications, 38th Edition,2019.
2. K. P Roy, "Elements of Mechanical Engineering", Media Promoters & Amp; Publishing Pvt. Ltd,7th Edition, 2014.

References:
1. S. Trymbaka Murthy, "Text book of Elements of Mechanical Engineering", MEDTECH, Scientific International Pvt Ltd, 1st Edition, 2019.
2. Husain, Iqbal, "Electric and Hybrid Vehicles: Design Fundamentls", CRC Press, 3rd Edition, 2021.
3. Arshdeep Bahga, Vijay Madisetti, "Internet of Things a Hands on Approach", Hydrabad Universities Press, 2020.
4. Dr. A. S. Ravindra, "Elements of Mechanical Engineering", Best Publications, 7th Edition, 2009.

B.E COMPUTER SCIENCE AND ENGINEERING			
Choice Based Credit System (CBCS)			
SEMESTER – II			
ETC- 1 Introduction to Internet of Things (IOT) 3:0:0)			
(Effective from the academic year 2022 -2023)			
Course Code	BETCK205H	CIE Marks	50
Teaching Hours/Week (L:T:P)	3:0:0	SEE Marks	50
Total Number of Contact Hours	40	Exam Hours	3

Course objectives:

This course will enable students to:

1. Understand about the fundamentals of Internet of Things and its building blocks along with their characteristics.
2. Understand the recent application domains of IoT in everyday life.
3. Gain insights about the current trends of Associated IOT technologies and IOT analytics.

Module – I
Basics of Networking: Introduction, Network Types, Layered network models   **Emergence of IoT:** Introduction, Evolution of IoT, Enabling IoT and the Complex Interdependence of Technologies, IoT Networking Components   **(8 Hours)**
Module – II
IoT Sensing and Actuation: Introduction, Sensors, Sensor Characteristics, Sensorial Deviations, Sensing Types, Sensing Considerations, Actuators, Actuator Types, Actuator Characteristics.   **(8 Hours)**
Module – III
IoT Processing Topologies and Types: Data Format, Importance of Processing in IoT, Processing Topologies, IoT Device Design and Selection Considerations, Processing Offloading.   **(8 Hours)**
Module – IV
Associated IoT Technologies: Cloud Computing: Introduction, Virtualization, Cloud Models, Service-Level Agreement in Cloud Computing, Cloud Implementation, Sensor -Cloud: Sensors-as-a-Service.   **IOT Case Studies**   Agricultural IoT – Introduction and Case Studies   **(8 Hours)**
Module – V
IOT Case Studies and Future Trends: Vehicular IoT – Introduction, Healthcare IoT – Introduction, Case Studies IoT Analytics – Introduction.   **(8 Hours)**

Textbooks

1. Sudip Misra, Anandarup Mukherjee, Arijit Roy, "Introduction to IoT", CambridgeUniversity Press 2021.

References

2. S. Misra, C. Roy, and A. Mukherjee, 2020. Introduction to Industrial Internet of Things andIndustry 4.0. CRC Press.

3. Vijay Madisetti and Arshdeep Bahga, "Internet of Things (A Hands-on-Approach)",1stEdition, VPT, 2014.

4. Francis daCosta, "Rethinking the Internet of Things: A Scalable Approach to Connecting Everything", 1st Edition, Apress Publications, 2013.

References:

1. E. Balaguruswamy, Programming in ANSI C, 7th Edition, Tata McGowan-Hill.

2. Brian W. Kernighan and Dennis M. Ritchie, The 'C' Programming Language, Prentice HallofIndia.

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 moreclarity inunderstanding the topics and verities of problem solving methods.

Department of Humanities and Social Sciences			
Choice Based Credit System (CBCS)			
SEMESTER –II			
Professional Writing skills in English (1:0:0) 1			
(Common to all Branches)			
(Effective from the academic year 2022-2023)			
Course Code	BPWSK206	CIE Marks	50
Teaching Hours/Week (L: T:P)	1:0:0	SEE Marks	50
Total Number of Lecture Hours	15	Exam Hours	01

Course objectives: This course will enable students to

1. Identify the Common Errors in Writing and Speaking English.
2. Improve their technical writing and Presentation skills for employment.
3. Acquire Employment and Workplace communication skills.
4. Learn about Techniques of Information Transfer through presentation in different level.

Module – 1

Preamble: Importance of English grammar, Vocabulary and Communication skills enhancing the employability skills of Engineering graduates.

Identifying Common Errors in Spoken and Written English: Common Errors identification in Parts of Speech, Use of Verbs and Phrasal Verbs, Auxiliary Verbs and their forms, Subject Verb Agreement (identification of common errors), Words Confused\Misused, Error identification in Sequence of Tenses. **3 hours**

Module – 2

Nature and Style of Sensible Writing: Organizing Principles of Paragraphs in Documents, Writing Introduction and Conclusion, Importance of proper Punctuation, Precise Writing, Techniques in Essay Writing, Sentence agreements and correction activities, Misplaced Modifiers, Word order, Errors due to the confusion of words. **3 hours**

Module – 3

Practises of Technical Reading and Writing: Introduction to Technical Writing Process, Report Writing, Significance of Reports, Types of Reports. Introduction to Technical Proposal Writings, Types and characteristics. Scientific Writing Process. Grammar- Voices and Reported Speech, Spotting errors and Sentence Improvement. Cloze test and Theme Detection-Exercises. **3 hours**

Module -4

Professional Communication for Employment: Listening comprehension, Types of Listening, Listening Barriers, Improving Listening Skills. Reading Comprehension, Tips for Effective Reading, Job Applications, Types of Official\employment\business Letters, Bio-Data vs Resume, Profile, CV writing, Emails, Blog writing and Memos. **3 hours**

Module – 5

Professional communication at Workplace: Group Discission and Professional Interviews, Intra and interpersonal Communication Skills at Workplace, Non-Verbal Communication Skills and its importance in GD and Interview, Presentation skills and formal Presentations by Students, Strategies of Presentation skills. **3 hours**

Course outcomes: The students will be able to:
1. Understand and identify the Common Errors in Writing and Speaking.
2. Enhance Technical writing and Presentation skills.
3. Exhibit Employment and Workplace communication skills.

4. Analyze and apply various Techniques of Information Transfer through presentation in different level

Textbooks
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]

References
1. Gajendra Singh Chauhan, Technical Communication, Cengage Learning India Pvt Limited, Latest Revised Edition, 2019
2. N.P. Sudharshana and C. Savitha, English for Engineers, Cambridge University Press ,2018.
3. Meenakshi Raman and Sangeetha Sharma, Technical Communication – Principles and Practice, Oxford University Press, Third Edition 2017.

All Engineering Departments Choice Based Credit System (CBCS) SEMESTER - II				
Innovation and Design Thinking (0:2:0)1 (Common to all Branches) (Effective from the academic year 2022 -2023)				
Course Code		BIDTK258	CIE Marks	50
Teaching Hours/Week (L:T:P)		0:2:0	SEE Marks	50
Total Number of Lecture Hours		26	Exam. Hours	01

Course objectives:

This course will enable students to:
1. Demonstrate the fundamental concept of design thinking for product and service development.
2. Illustrate empathetic design for potential customers.
3. Develop and examine the problem solving techniques for innovative products and services.
4. Demonstrate the fundamental concept of innovation for product and service development.
5. To discuss the methods of implementing design thinking in the real world.

Module – 1

Introduction to Design Thinking: Introduction, Importance of design thinking, what is design thinking**:** principles of design thinking, the process of design thinking**,** double-diamond model. The Philosophy of Design thinking, rules of design thinking.
Frame work of Design Thinking: Aesthetics and creativity as design thinking mechanisms, Psychological and neural bases of creativity, a definition and framework of design thinking.
How to understand the problem: How to analyse problems, Search field determination.
Understanding of the problem: The blind spot of knowledge and awareness, Problem analysis: PESTEL-Analysis.
Case studies on PESTEL-Analysis.   (5 Hours)

Module – 2

How to Observe: Observation Phase, Empathetic design, Tips for observing, Method for Empathetic Design: Behavioural Mapping and Tracking, Empathy Map, Heuristic Evaluation, Customer Journey**.**
How to Define the Problem: Point-of-view phase, Characteristics of target group, Persona, Jobs-to-be done, Means-end approach.
Ideate Phase: The creative process, success factor for creative process. brainstorming: rules and tips for brain storming, mind mapping, rules for mind mapping, synectics.
Case studies on Empathetic design.   (5 Hours)

Module – 3

Evaluation of ideas: Checklists/Proc-Cons lists, assessment areas of innovations, PPCO method,

SWOT analysis for ideas, theory of inventive problem solving(TRIZ), principle of evolution, innovation checklist, resource analysis.

Real-Time Design Interaction: Introduction, improving design process instrumentation, real-time design research instrument.

Collaboration in digital space: Creativity across distances, analysing design thinking working modes, evaluating existing tool for remote collaboration and digital whiteboard.

Case studies on SWOT analysis. (5 Hours)

Module – 4

Innovation Process: Model Unified innovation process model for engineering designers and managers, Feedback pathways and gates: designer and reviewer initiated.

Strategic innovations: Design thinking approach: - Growth, predictability, strategic foresight, change, sense making, value redefinition, extreme competition, experience design standardization, creative culture, rapid prototyping, strategy and organization and business model design.

Innovation Culture*:* Nested view of design thinking and practice, national culture and design practice, method, Insights: culture and design, methodological insights.

(5 Hours)

Module – 5

Prototype and Testing: Prototype phase, storyboarding, storytelling, test phase, tips for prototype testing, tips for interviews, tips for survey, requirements for space and materials, Agility for design thinking, the Scrum guide, how to conduct workshop, MVP and prototyping.

Efficacy of prototyping*:* The efficacy of prototyping under time constraints, introduction, method, materials and design task, participants, procedure, results, participant creations. interviews.

Business process modelling: Introduction, process models mediate communication, research question and iterating ideas.

(5 Hours)

Course Outcomes: The students will be able to:
1. Demonstrate the concept of Design thinking for real world problems.
2. Illustrate empathy, define and ideate for design thinking problems.
3: Describe evaluation of ideas, design interaction and collaborations.
4: Discuss innovation process & culture and strategic innovations.
5: Illustrate prototyping and business process modelling for products and services.

Textbooks:

1. Christian Mueller-Roterberg, Handbook of Design Thinking, Tips & Tools for how to design thinking, Kindle Direct Publishing, 2018.

2. A Nil Hasso Plattner, Christoph Meinel and Larry Leifer, Design Thinking: Understand – Improve – Apply, Springer, 2011.

References:

3. Idris Mootee, Design Thinking for Strategic Innovation: What They Can't Teach You at Business or Design School, John Wiley & Sons 2013.

4. Jeanne Liedtka , Andrew King , Kevin Bennett, Solving Problems with Design Thinking - Ten Stories of What Works ,Columbia Business School Publishing, 2013.

5. Gavin Ambrose Paul Harris, Basics of Design Thinking, AVA Publishing, Switzerland, 2009.

Web links and Video Lectures (e-Resources):

1. www.tutor2u.net/business/presentations/. /productlifecycle/default.html

2. https://docs.oracle.com/cd/E11108_02/otn/pdf/. /E11087_01.pdf

3. www.bizfilings.com › Home › Marketing › Product Development

4. https://www.mindtools.com/brainstm.html

5. https://www.quicksprout.com/. /how-to-reverse-engineer-your-competit

6. www.vertabelo.com/blog/documentation/reverse-engineering

6. https://support.microsoft.com/en-us/kb/273814

7. https://support.google.com/docs/answer/179740?hl=en

8. https://www.youtube.com/watch?v=2mjSDIBaUlM

7. thevirtualinstructor.com/foreshortening.html

8. https://dschool.stanford.edu/.../designresources/.../ModeGuideBOOTCAMP2010L.pdf

9. https://dschool.stanford.edu/use-our-methods/ 6.
   https://www.interactiondesign.org/literature/article/5-stages-in-the-design-thinking-process

10. http://www.creativityatwork.com/design-thinking-strategy-for-innovation/ 49 8.

11. https://www.nngroup.com/articles/design-thinking/ 9.

12. https://designthinkingforeducators.com/design-thinking/ 10.

13. www.designthinkingformobility.org/wp-content/.../10/NapkinPitch_Worksheet.pdf

14. NPTL : Design Thinking - A Primer - Course (nptel.ac.in)

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

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

ಸಾಂಸ್ಕೃತಿಕ ಕನ್ನಡ Samskrutika Kannada (1:0:0):1

(Effective from the academic year 2022-2023)

ವಿಷಯ ಸಂಕೇತ Course Code	BKSKK107/207	ನಿರಂತರ ಆಂತರಿಕ ಮೌಲ್ಯಮಾಪನದ ಅಂಕಗಳು CIE Marks	**50**
ಒಂದು ವಾರಕ್ಕೆ ಬೋಧನಾ ಅವಧಿ Teaching hours/Week (L: T:P)	**1:0:0**	ಸೆಮಿಸ್ಟರ್ ಅಂತ್ಯದ ಪರೀಕ್ಷೆಯ ಅಂಕಗಳು SEE Marks	**50**
ಒಟ್ಟು ಬೋಧನಾ ಅವಧಿ Total Number of contact hours	**15**	ಪರೀಕ್ಷೆಯ ಅವಧಿ Exam Hours	**01**

Course Objectivies: ಸಾಂಸ್ಕೃತಿಕ ಕನ್ನಡ ಪಠ್ಯ ಕಲಿಕೆಯ ಉದ್ದೇಶಗಳು:

1. ಪದವಿ ವಿದ್ಯಾರ್ಥಿಗಳಾಗಿರುವುದರಿಂದ ಕನ್ನಡ ಭಾಷೆ, ಸಾಹಿತ್ಯ ಮತ್ತು ಸಂಸ್ಕೃತಿಯ ಪರಿಚಯ ಮಾಡಿಕೊಡುವುದು.

2. ಕನ್ನಡ ಸಾಹಿತ್ಯದ ಪ್ರಧಾನ ಭಾಗವಾದ ಆಧುನಿಕ ಪೂರ್ವ ಮತ್ತು ಆಧುನಿಕ ಕಾವ್ಯಗಳನ್ನು ಪರಿಚಯಿಸುವುದು.

3. ವಿದ್ಯಾರ್ಥಿಗಳಲ್ಲಿ ಸಾಹಿತ್ಯ ಮತ್ತು ಸಂಸ್ಕೃತಿಯ ಬಗ್ಗೆ ಅರಿವು ಹಾಗೂ ಆಸಕ್ತಿಯನ್ನು ಮೂಡಿಸುವುದು.

4. ತಾಂತ್ರಿಕ ವ್ಯಕ್ತಿಗಳ ಪರಿಚಯವನ್ನು ಹಾಗೂ ಅವರುಗಳು ಸಾಧಿಸಿದ ವಿಷಯಗಳನ್ನು ಪರಿಚಯಿಸುವುದು.

5. ಸಂಸ್ಕೃತಿಕ, ಜನಪದ ಹಾಗೂ ಪ್ರವಾಸ ಕಥನಗಳ ಪರಿಚಯ ಮಾಡಿಕೊಡುವುದು.

ಫಟಕ–1

ಕನ್ನಡ ಸಂಸ್ಕೃತಿ ಮತ್ತು ಭಾಷೆ ಕುರಿತಾದ ಲೇಖನಗಳು:

ಕರ್ನಾಟಕ ಸಂಸ್ಕೃತಿ – ಹಂಪ ನಾಗರಜಯ್ಯ

ಕರ್ನಾಟಕ ಏಕೀಕರಣ: ಒಂದು ಅಪೂರ್ವ ಚರಿತ್ರೆ–ಜಿ. ವೆಂಕಟಸುಬ್ಬಯ್ಯ

ಆಡಳಿತ ಭಾಷೆಯಾಗಿ ಕನ್ನಡ–ಡಾ.ಎಲ್.ತಿಮ್ಮೇಶ ಮತ್ತು ಪ್ರೊ.ವಿ.ಕೇಶವಮೂರ್ತಿ   **3 ಗಂಟೆಗಳು**

ಫಟಕ–2

ಆಧುನಿಕ ಪೂರ್ವದ ಕಾವ್ಯ ಭಾಗ:

ವಚನಗಳು–ಬಸವಣ್ಣ, ಅಕ್ಕಮಹಾದೇವಿ, ಆಯ್ದಕ್ಕಿ ಮಾರಯ್ಯ, ಜೇಡರದಾಸಿಮಯ್ಯ, ಆಯ್ದಕ್ಕಿ ಲಕ್ಕಮ್ಮ

ಕೀರ್ತನೆಗಳು–ಅದರಿಂದೇನು ಫಲ ಇದರಿಂದೇನು ಫಲ–ಪುರಂದರದಾಸರು ತಲ್ಲಣಿಸದಿರು ಕಂಡ್ಯ ತಾಳು ಮನವೇ–ಕನಕದಾಸರು

ತತ್ವಪದಗಳು: ಸಾವಿರ ಕೊಡಗಳ ಸುಟ್ಟು – ಶಿಶುನಾಳ ಶರೀಫ   **3 ಗಂಟೆಗಳು**

ಫಟಕ–3

ಆಧುನಿಕ ಕಾವ್ಯ ಭಾಗ:

ಡಿ.ವಿ.ಜಿ.ಯವರ ಮಂಕು ತಿಮ್ಮನ ಕಗ್ಗದಿಂದ ಆಯ್ದ ಕೆಲವು ಭಾಗಗಳು.

ಕುರುಡು ಕಾಂಚಾಣ: ದಾ. ರಾ. ಬೇಂದ್ರೆ	
ಹೊಸ ಬಾಳಿನ ಗೀತೆ: ಕುವೆಂಪು	**3 ಗಂಟೆಗಳು**
ಘಟಕ–4	
ತಾಂತ್ರಿಕ ವ್ಯಕ್ತಿಗಳ ಪರಿಚಯ: ಡಾ.ಸರ್.ಎಂ.ವಿಶ್ವೇಶ್ವರಯ್ಯ:ವ್ಯಕ್ತಿ ಮತ್ತು ಐತಿಹ್ಯ–ಎ.ಎನ್.ಮೂರ್ತಿರಾವ್ ಕರಕುಶಲ ಕಲೆಗಳು ಮತ್ತು ಪರಂಪರೆಯ ವಿಜ್ಞಾನ–ಕರೀಗೌಡ ಬೀಚನಹಳ್ಳಿ	**3 ಗಂಟೆಗಳು**
ಘಟಕ–5	
ಸಂಸ್ಕೃತಿಕ, ಜನಪದ ಕಥೆ ಮತ್ತು ಪ್ರವಾಸ ಕಥನ: ಯುಗಾದಿ: ವಸುಧೇಂದ್ರ ಮೆಗಾನೆ ಎಂಬ ಗಿರಿಜನ ಪರ್ವತ: ಹಿ.ಚಿ.ಬೋರಲಿಂಗಯ್ಯ	**3 ಗಂಟೆಗಳು**

Course outcome (course skills set)

ಸಾಂಸ್ಕೃತಿಕ ಕನ್ನಡ (BKSKK107/207) ಪಠ್ಯ ಕಲಿಕೆಯ ನಂತರ ವಿದ್ಯಾರ್ಥಿಗಳಲ್ಲಿ:

1. ಕನ್ನಡ ಭಾಷೆ, ಸಾಹಿತ್ಯ ಮತ್ತು ಕನ್ನಡದ ಸಂಸ್ಕೃತಿಯ ಕುರಿತು ಅರಿವು ಮೂಡಿರುತ್ತದೆ.
2. ಕನ್ನಡ ಸಾಹಿತ್ಯದ ಆಧುನಿಕ ಪೂರ್ವ ಮತ್ತು ಆಧುನಿಕ ಕಾವ್ಯಗಳನ್ನು ಸಾಂಕೇತಿಕವಾಗಿ ಕುರಿತು ಹೆಚ್ಚಿನ ಓದಿಗೆ ಮತ್ತು ಜ್ಞಾನಕ್ಕೆ ಸ್ಫೂರ್ತಿ ಮೂಡುತ್ತದೆ.
3. ವಿದ್ಯಾರ್ಥಿಗಳಲ್ಲಿ ಸಾಹಿತ್ಯತ ಮತ್ತು ಸಂಸ್ಕೃತಿಯ ಬಗ್ಗಡೆ ಅರಿವು ಹಾಗೂ ಆಸಕ್ತಿಯನ್ನು ಹೆಚ್ಚಾಗುತ್ತದೆ.
4. ತಾಂತ್ರಿಕ ವ್ಯಕ್ತಿಗಳ ಪರಿಚಯ ಹಾಗೂ ಅವರುಗಳ ಸಾಧಿಸಿದ ವಿಷಯಗಳನ್ನು ತಿಳಿದುಕೊಂಡು ನಾಡಿನ ಇನ್ನಿತರ ವ್ಯಕ್ತಿಗಳ ಬಗ್ಗೆ ತಿಳಿದುಕೊಳ್ಳಲು ಕೌತುಕತೆ ಹೆಚ್ಚಾಗುತ್ತದೆ.
5. ಸಾಂಸ್ಕೃತಿಕ, ಜನಪದ ಹಾಗೂ ಪ್ರವಾಸ ಕಥನಗಳ ಪರಿಚಯ ಮಾಡಿಕೊಡುವುದು.

Textbook:
ಸಾಂಸ್ಕೃತಿಕ ಕನ್ನಡ
ಡಾ.ಹಿ.ಚಿ ಬೋರಲಿಂಗಯ್ಯ ಮತ್ತು ಡಾ. ಎಲ್. ತಿಮ್ಮೇಶ,
ಪ್ರಸಾರಾಂಗ ವಿಶ್ವೇಶ್ವರಯ್ಯ ತಾಂತ್ರಿಕ ವಿಶ್ವವಿದ್ಯಾಲಯ, ಬೆಳಗಾವಿ

Department of Humanities and Social Sciences			
Choice Based Credit System (CBCS)			
SEMESTER – I/II			
ಬಳಕೆ ಕನ್ನಡ **Balake Kannada (Kannada for Usage) (1:0:0):1**			
(Common to all Branches)			
(Effective from the academic year 2022-2023)			
Course Code	BKBKK107/207	CIE Marks	50
Teaching Hours/Week (L: T:P)	1:0:0	SEE Marks	50
Total Number of Lecture Hours	15	Exam Hours	01

ಬಳಕೆ ಕನ್ನಡ ಪಠ್ಯ ಕಲಿಕೆಯ ಉದ್ದೇಶಗಳು **(Course Learning Objectives):**

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

Module – 1

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

Module – 2

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

Module – 3

ಚತುರ್ಥಿ ವಿಭಕ್ತಿ ಪ್ರತ್ಯಯದ ಬಳಕೆ ಮತ್ತು ಸಂಖ್ಯಾವಾಚಕಗಳು Dative cases and Numerals. ಸಂಖ್ಯಾಗುಣವಾಚಕಗಳು ಮತ್ತು ಬಹುವಚನ ನಾಮರೂಪಗಳು Ordinal numerals and Plural makers. ನ್ಯೂನ/ನಿಷೇದಾರ್ಥಕ ಕ್ರಿಯಾಪದಗಳು ವ ಼ತ್ತು ವರ್ಣ ಗುಣವಾಚಕಗಳು Defective /Negative Verbs and Colour Adjectives.   **3 hours**

Module – 4

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

Module – 5

ಕಾಲ ಮತ್ತು ಸಮಯದ ಹಾಗೂ ಕ್ರಿಯಾ ಪದಗಳ ವಿವಿಧ ಪ್ರಕಾರಗಳು, Different types of tense, time and verbs.
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. ಕರ್ನಾಟಕ ರಾಜ್ಯ ಮತ್ತು ರಾಜ್ಯದ

ಬಗ್ಗೆ ಕುರಿತಾದ ಇತರೆ ಮಾಹಿತಿಗಳು Karnataka state and general information about the state. ಕನ್ನಡ ಭಾಷೆ ಮತ್ತು ಸಾಹಿತ್ಯ Kannada Language and Literature. ಭಾಷೆ ಕಲಿಯಲು ಏನನ್ನು ಮಾಡಬೇಕು ಮತ್ತು ಮಾಡಬಾರದು Do's and Dont's in Learning a Language   **3 hours**

ಬಳಕೆ ಕನ್ನಡ ಪಠ್ಯ ಕಲಿಕೆಯಿಂದ ವಿದ್ಯಾರ್ಥಿಗಳಿಗೆ ಆಗುವ ಅನುಕೂಲಗಳು ಮತ್ತು ಫಲಿತಾಂಶಗಳು: **Course outcomes:**

At the end of the Course, The Students will be able to
1. Understand the necessity of learning of local language for comfortable life.
2. Listen and understand the Kannada language properly.
3. Speak, read and write Kannada language as per requirement.
4. Communicate (converse) in Kannada language in their daily life with Kannada speakers.
5. Speak in polite conservation

Textbook:
ಬಳಕೆ ಕನ್ನಡ
ಲೇಖಕರು: ಡಾ. ಎಲ್. ತಿಮ್ಮೇಶ
ಪ್ರಸಾರಾಂಗ, ವಿಶ್ವೇಶ್ವರಯ್ಯ ತಾಂತ್ರಿಕ ವಿಶ್ವವಿದ್ಯಾಲಯ, ಬೆಳಗಾವಿ