P. E. S. COLLEGE OF ENGINEERING, MANDYA

Scheme of Teaching and Examinations - 2025

Outcome-Based Education (OBE) and Choice Based Credit System (CBCS)

(Effective from the academic year 2025-26)

B.E. I – Semester [Physics Group] | **Stream: Computer Science & Engineering Stream (CS&E)** | **Programme: CS&E, IS & E, AIML, DS, CSBS**

Sl. No	Course and Course Code		Course Title	TD/PSB	Teaching Hours/Week				Examination				Credits
					Theory Lecture	Tutorial	Practical/ Drawing	SAAE	Duration in hours	CIE Marks	SEE Marks	Total Marks	
					L	T	P	S					
1	ASC(IC)	P25MACS101	Applied Mathematics -I (Calculus and Linear Algebra)	Maths	3	2	0		03	50	50	100	04
2	ASC	P25PHCS102	Applied Physics (Quantum Physics and Applications)	PHY	3	0	0		03	50	50	100	03
3	ETC	P25ETC103	Introduction to AI and Applications	Respective Engg dept	3	0	0		03	50	50	100	03
4	ESC	P25ESC1042	Engineering Science Courses-I (Introduction to Electrical Engineering) (For CSDS branch only)	Respective Engg dept	3	0	0		03	50	50	100	03
		P25ESC1043	Engineering Science Courses-I (Introduction to Electronics and Communication Engineering)										
5	PSC	P25PSC1055	Programme Specific Courses (Programming in C)	Respective Engg dept	3	0	0		03	50	50	100	03
6	PSC	P25PSCL1065	Program-Specific Course Lab (C Programming Laboratory)	Respective Engg dept	0	0	2		02	50	50	100	01
7	ASC	P25PHCSL107	Applied Physics Laboratory (Quantum Physics and Applications)	PHY	0	0	2		02	50	50	100	01
8	AEC	P25ENG108	Communicative English - I	Humanities	1	0	0		01	50	50	100	O1
9	AEC/SDC	P25IDT109	Innovation and Design Thinking Lab (**Project-based learning-** IDEA Lab Workshop/ Maker's space)	Any Dept	0	0	2		02	50	50	100	01
10	HSMS	P25KSK110/ P25KBK110	Samskrutika Kannada/ Balake Kannada	Humanities	1	0	0		01	100	--	100	PP
			TOTAL							550	450	**1000**	**20**
11	**AICTE Activity Points** (students have to earn **100** activity points between 01 to 08 semester)			Compulsory requirement for the award of a degree									

S- (SAAE) Students Academic Activity Engagement Hours, **ASC**-Applied Science Course, **ESC**- Engineering Science Courses, **IC** – Integrated Course (Practical Course Integrated with Theory Course), **PLC(IC)**- Programming Language Course (Integrated Course), **AEC**- Ability Enhancement Course, **AEC/SDC**- Ability Enhancement Course/Skill Development course, **ETC**- Emerging Technology Course, **TD/PSB**- Teaching Department / Paper Setting Board, **HSMC**-Humanity, Social Science and management Course, **CIE** –Continuous Internal Evaluation, **SEE**- Semester End Examination, **NCMC:** Non Credit Mandatory Course, **PP** : (Pass/Pass) is assigned to a non credit course. "PP" represents pass in course provided students have successfully completed the CIE requirements. Otherwise, "NP-not pass shall be awarded. "PP" is essential for the award of the degree

Credit Definition: 1-hour Lecture **(L)** per week=**1Credit** 2-hoursTutorial**(T)** per week=**1Credit**	04-Credits courses are to be designed for 50 hours of Teaching-Learning Session 04-Credits (IC) are to be designed for 40 hours' theory and 10-12 hours of practical sessions 03-Credits courses are to be designed for 40 hours of Teaching-Learning Session 02- Credits courses are to be designed for 25 hours of Teaching-Learning Session
2-hours Practical / Drawing (**P**) per week=**1Credit**	01-Credit courses are to be designed for 12 hours of Teaching-Learning sessions

Integrated courses (IC), combining theory with practical components.

The theory sessions conducted for 3 hours per week, while the practical sessions will be conducted for 2 hours per week.

- The theory component will be evaluated through both Continuous Internal Evaluation (CIE) and Semester End Examination (SEE).
- The practical component will be assessed only through CIE. However, questions related to the practical content will be included in the SEE question paper as part of the final examination.

The **Student Induction Programme** (SIP), initiated by the All-India Council for Technical Education (AICTE), is designed to help newly admitted students in technical institutions transition smoothly into the higher education environment. It aims to familiarize students with the institutional culture, foster connections with peers and faculty, and provide a foundation for holistic learning. The first year of Engineering programmes is composed of I semester and II semester and Summer Semester. SIP activities shall be scheduled in the afternoon sessions during the first week of class commencement of I and II semesters only. Activities under SIP may include Physical Activities, Creative Arts, Universal Human Values, Literary Events, Proficiency Modules, Lectures by Eminent Personalities, Local Area Visits, Department/Branch Familiarization, and Innovation-related sessions. The specific programmes to be conducted will be notified separately by the University, with the academic calendar or separately.

AICTE Activity Points Requirement for BE/B.Tech. Programmes

As per AICTE guidelines (refer Chapter 6 – *AICTE Activity Point Program, Model Internship Guidelines*), in addition to academic requirements, students must earn a specified number of **Activity Points** to be earned is to be eligible for the award of their degree.

- **Regular students** admitted to a 4-year degree program must earn **100 Activity Points**.
- **Lateral entry students** (joining from the second year) must earn **75 Activity Points**.
- **Students transferred** from other universities directly into the fifth semester must earn **50 Activity Points** from the date of entry into VTU.

These Activity Points are **non-credit** and will not be considered for **the SGPA/CGPA** or be used for **vertical progression**. However, they are mandatory for the **award of the degree**, and the points earned will be reflected on the **eighth semester Grade Card**.

The hours spent for earning the activity points shall not be counted for regular attendance requirements. Students can accumulate these points at any time during their program, including on weekends, holidays, and vacations starting from the year of admission, provided they meet the minimum hours of engagement prescribed for each activity.

If a student fails to earn the required Activity Points, the eighth-semester Grade Card will be withheld until the requirement is fulfilled. Consequently, the degree will be awarded only after the Grade Card has been released.

Applied Mathematics-I					Applied Physics				
Code	**Title**	**L**	**T**	**P**	**Code**	**Title**	**L**	**T**	**P**
P25MACV101	Differential Equations and Linear Algebra: CV Stream	3	2	0	P25PHCV102	Physics for Sustainable Structural System (CV stream)	3	0	0
P25MAME101	Differential Calculus and Linear Algebra: ME Stream	3	2	0	P25PHME102	Physics of Materials (Mech stream)	3	0	0
P25MAEE101	Calculus and Numerical Techniques: EEE Stream	3	2	0	P25PHEC102	Quantum Physics and Electronics Sensors (ECE stream)/	3	0	0
P25MACS101	Calculus and Linear Algebra: CSE Stream	3	2	0	P25PHEE102	Physics of Electrical & Electronics Materials (EEE)	3	0	0
					P25PHCS102	Quantum Physics and Applications (CSE stream)	3	0	0
Programme Specific Courses (PSC)					**Engineering Science Courses-I(ESC-I)**				
P25PSC1051	Engineering Mechanics	3	0	0	P25ESC1041	Introduction to Building Sciences	3	0	0
P25PSC1052	Elements of Mechanical Engineering	3	0	0	P25ESC1042	Introduction to Electrical Engineering	3	0	0
P25PSC1053	Elements of Electrical Engineering	3	0	0	P25ESC1043	Introduction to Electronics & Communication Engineering	3	0	0
P25PSC1054	Fundamentals of Electronics & Communication Engineering	3	0	0	P25ESC1044	Introduction to Mechanical Engineering	3	0	0
P25PSC1055	Programming in C	3	0	0	P25ESC1045	Essentials of Information Technology	3	0	0
P25PSC1056	Elements of Biotechnology and Biomimetics	3	0	0					
P25PSC1057	Principles of Soil Science and Agronomy	3	0	0					
Program-Specific Course Lab (PSCL)					**Emerging Technology Course (ETC)**				
P25PSCL1061	Mechanics and Materials Lab	0	0	2	P25ETC103	Introduction to AI and Applications	3	0	0
P25PSCL1062	Basic Electrical & Electronics Engineering Lab	0	0	2					
P25PSCL1063	Fundamentals of Electronics & Communication Engineering Lab	0	0	2		**Applied Physics Lab (ASC Lab)**			
P25PSCL1064	Elements of Mechanical Engineering Lab	0	0	2	P25PHCSL107	Applied Physics Laboratory (Quantum Physics and Applications)	0	0	2
P25PSCL1065	C Programming Lab	0	0	2					
P25PSCL1066	Soil Science and Agronomy Field Lab	0	0	2					
P25PSCL1067	Elements of Biotechnology Lab	0	0	2					

The Mathematics/Physics courses shall be taught by a single faculty member per session, with no sharing of the course (subject) modules. The **tutorial sessions** for the **mathematics course** shall be conducted in the Laboratory environment using **MATLAB software** to enhance computational understanding and application skills.

Students admitted to a specific engineering stream are required to select and successfully complete **Applied Mathematics-I** and **Applied Physics courses** that are aligned with their program stream. These courses are intended to reinforce the academic foundations and develop the professional competencies relevant to their chosen engineering discipline.

Programme Specific Courses (PSC): Programme Specific Courses (PSC) are a set of core courses tailored to the specific branch or discipline of engineering in which a student is enrolled (e.g., Mechanical Engineering, Computer Science, Civil Engineering, etc.). These courses are intended to provide students with in-depth knowledge and specialized skills essential for professional competence in their chosen field.

Students must select and complete the courses from this group that **correspond to their admitted program stream**.

Similarly, students are also required to choose and pass laboratory courses that are specific to their stream from the **Programme Specific Courses Laboratory (PSCL)** group.

Engineering Sciences Courses-I(ESC-I): Courses designed to broaden the technical knowledge of students beyond their core area of study. These courses enable students to gain a foundational understanding of engineering principles from other disciplines. Students are required to select and complete the courses that do not belong to their admitted program stream. For example, a student admitted to the Civil Engineering program must choose a course such as Introduction to Mechanical Engineering or Introduction to Electrical Engineering, rather than Civil Engineering-related subjects. The course selected under Engineering Science Courses – II (ESC-II) must be different from the course chosen under ESC-I and must also not belong to the student's admitted engineering stream.

I SEMESTER

Course Title	CALCULUS AND LINEAR ALGEBRA						
Course Code	P25MACS101						
Category	Mathematics for CS and Allied branches						
Scheme and Credits	Theory/Practical/Integrated					Total teaching hours	Credits
	L	T	P	SS	Total		
	3	0	2	-	05	(40HoursTheory+20Hours Practical)	04
CIE Marks:50	**SEE Marks:50**		**Total Max. marks=100**		**Duration of SEE: 03Hours**		

Course Learning Objectives:	
1	Apply the concepts of multivariable calculus and vector calculus to compute derivatives, optimize functions, and analyze vector fields for applications in computer science engineering.
2	Solve system of linear equations and determine eigen values and eigenvectors using direct and iterative methods.
3	Apply the concepts of vector spaces and linear transformations to problems in computer science.
4	Demonstrate the applications of computer science and allied engineering Science using modern ICT tools.

Unit	**Syllabus content**	**No. of hours**
I	**Calculus** Partial differentiation, total derivative, differentiation of composite functions, Jacobian, Statement of Taylor's and Maclaurin's series expansion for two variables. Maxima and minima for the function of two variables. **Self-Study:** Extended Euler's theorem.	8 hours
II	**Vector Calculus:** Scalar and vector fields, Gradient, directional derivatives, divergence and curl - physical interpretation, solenoidal vector fields, irrotational vector fields and scalar potential. Introduction to polar coordinates and polar curves. Curvilinear coordinates: Scale factors, base vectors, Cylindrical polar coordinates, Spherical polar coordinates, transformation between cartesian and curvilinear systems, orthogonality. **Self-Study:** Vector Identities.	8 hours
III	**System of Linear Equations, Eigen values and Eigen vectors:** Elementary row transformation of a matrix, Echelon form, rank of a matrix. Consistency and solution of system of linear equations: Gauss elimination method, Gauss Jordan method. Applications: Traffic flow. Eigen values and Eigen vectors, diagonalization of the matrix, modal matrix. **Self-Study:** Normal form of the matrix	8 hours
IV	**Vector Space** definition and examples, subspace: definition and examples. Linear Combinations, linear span, linearly independent and dependent sets, basis and dimension, row space and column space of a matrix, Coordinates vector, inner products and orthogonality. **Self-Study**: linear Combinations.	8 hours
V	**Linear Transformation** Definition and examples, algebra of linear transformations, matrix of a linear transformation. Singular, non- singular linear transformations and invertible linear transformations. Rank and nullity of linear	8 hours

	transformations. **Self-Study:** Rank-Nullity theorem.	

COURSEOUTCOMES: On completion of the course, student should be able to:

CO1: Apply the concepts of multivariable calculus and vector calculus to compute derivatives, optimize functions, and analyze vector fields for applications in computer science engineering.

CO2: Solve system of linear equations and determine eigen values and eigen vectors using direct and iterative methods.

CO3: Apply the concepts of vector spaces and linear transformations to problems in computer science engineering.

CO4: Demonstrate the applications of computer science and allied engineering Science using modern ICT tools

TEACHING – LEARNING PROCESS: Chalk and Talk, power point presentation, animations,

Textbooks:

1. B. S. Grewal, Higher Engineering Mathematics, Khanna Publishers, 44th Ed., 2021.
2. Gilbert Strang, Linear Algebra and its Applications, Cengage Publications, 4th Ed., 2022.
3. Seymour Lipschutz and Marc Lipson, Linear Algebra, Schaum's outlines series,4th Ed., 2008.

Reference books:

1. B. V. Ramana, Higher Engineering Mathematics" McGraw-Hill Education,11th Ed.,2017
2. N. P. Bali and Manish Goyal, A Textbook of Engineering Mathematics, Laxmi Publications, 10th Ed., 2022.
3. James Stewart, Calculus, Cengage Publications,7th Ed., 2019.
4. David Poole, Linear Algebra, a modern introduction, Cengage publishers, 4th Ed., 2014.
5. David C. Lay, Linear Algebra and its Applications, Pearson Publishers,4th Ed., 2018.
6. Gareth Williams, Linear Algebra with applications, Jones Bartlett Publishers Inc.,6thEd.,2017.

Web links and Video Lectures(e-Resources):

- http://academicearth.org/
- VTUe-ShikshanaProgram
- VTUEDUSATProgram
- https://nptel.ac.in/courses/111106135
- https://nptel.ac.in/courses/111105160
- https://ocw.mit.edu/courses/18-06-linear-algebra-spring-2010/
- https://ocw.mit.edu/courses/18-02sc-multivariable-calculus-fall-2010/

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	2										
CO2	2	3										
CO3	3	2										
Strength of correlation: Low-1, Medium-2, High-3												

Course Title: Applied Physics - Quantum Physics and Applications (CSE Stream)		
Course Code: P25PHCS102/202	**Semester: I/II**	**Scheme: P25**
Teaching hours/week (L: T:P): (3:0:0)	**CIE Marks:50**	**CIE Weightage:50%**
Credits: 03	**SEE Marks:50**	**SEE Weightage: 50%**
Teaching hours of Pedagogy: 40 hours Theory	**Total: 100**	**Exam Hours: 3 Hrs**

Course Learning Objectives:

- To **study** the fundamental principles of quantum mechanics to analyze microscopic systems.
- To **recall** the origin of electrical conductivity in metals and semiconductors.
- To **learn** the properties of superconductors and their applications.
- To **understand** the concepts light–matter interaction and their role in laser-based technologies.
- To **explore**the idea of quantum information & quantum computing and their role in the development of quantum computing systems.

UNIT-I	**Hrs: 08**

Quantum Mechanics: de Broglie Hypothesis, Heisenberg's Uncertainty Principle and its application (Broadening of Spectral Lines), Principle of Complementarity, Wave Function, Time independent Schrödinger wave equation (Derivation), Physical significance of a wave function and Born Interpretation, Expectation value and its physical significance, Eigen functions and Eigen values, Particle inside one dimensional infinite potential well, Role of higher dimensions (Qualitative), Waveforms and Probabilities, Particle inside a finite potential well and quantum tunneling, Numerical Problems.

Prerequisite: Physics principles like waves, particles, energy, momentum and atomic spectra

Self-Study Component: Particle inside a finite potential well and quantum tunneling

UNIT - II	**Hrs: 08**

Electrical Properties of Metals and Semiconductors: Failures of classical free electron theory, Mechanisms of electron scattering in solids, Matheissen's rule, Assumptions of Quantum Free Electron Theory, Density of States, Fermi Dirac statistics, Fermi Energy, Variation of Fermi Factor with Temperature and Energy, Expression for carrier concentration in a conductor, Mention of expression for electrical conductivity, Success of quantum free electron theory of metals, Derivation of electron concentration in an intrinsic semiconductor, Expression for electron and hole concentration in extrinsic semiconductor (Qualitative), Fermi level for intrinsic(with derivation) and extrinsic semiconductor (no derivation), Hall effect, Numerical Problems.

Prerequisite: Basic concepts like energy bands and electrical conductivity in metals

Self-Study Component: Hole concentration in an extrinsic semiconductor

UNIT - III	**Hrs: 08**

Superconductivity: Zero resistance state, Persitent current, Meissner effect, Critical temperature, Critical current (Silsbee Effect) – Derivation of expression of critical current for a cylindrical wire using ampere's law, Critical field, Formation of Cooper pairs - Mediation of phonons, Two-fluid model, BCS Theory - Phase coherent state, Limitations of BCS theory, Examples of systems with low and high electron-phonon coupling, Type-I and Type-II superconductors, Formation of Vortices, Explanation for upper critical field, Cooper pair Tunneling (Andreev reflection), Josephson junction, Flux quantization, DC and AC SQUID (Qualitative), Numerical Problems.

Prerequisite: Solid state physics & fundamentals of electromagnetism

Self-Study Component: Formation of vortices and DC and AC SQUID

UNIT - IV	**Hrs: 08**

Photonics : Interaction of radiation with matter – Einstein's A and B coefficients and derivation of expression for energy density, Prerequisites for lasing actions, Types of LASER – Semiconductor diode LASER, Use of attenuators for single photon sources, Optical modulators - Pockel's effect, Kerr effect, Photodetectors – Single Photon Avalanche Diode, Superconducting Nanowire Single Photon Detector, Optical fiber, Derivation of Numerical aperture, V-number, Number of modes, losses in optical fiber, Mach-Zehnder interferometer, Numerical problems.

Prerequisite: Concept of laser principles and wave propogation

Self-Study Component: Mach-Zehnder interferometer

UNIT - V	**Hrs: 08**

Quantum Computing: Moore's law - limitation of VLSI, Classical vs Quantum Computation, bit, Qubit and its properties, Bloch Sphere, Dirac notation, Brief discussion on types of qubit, Superconducting qubits, Harmonic oscillator (qualitative) – Need for anharmonicity, Charge qubit, Operators and Operations (Matrix form), Quantum Gates – Pauli Gates, Phase gate (S, T), Hadamard Gate, Two qubit gates – CNOT gate, Entangalment, Bell states, Predicting the outputs of various combinations of single and two-qubit gates, Numerical Problems.

Prerequisite: Basics of Boolean logic and classical logic gates

Self-Study Component: Harmonic oscillator

Suggested Learning Resources:

Textbooks:

	Title	**Author**	**Year & Edition**	**Publisher**
1.	Engineering Physics	Satyendra Sharma and Jyotsna Sharma	2018	Pearson
2.	Engineering Physics	S L Kakani, Shubra Kakani	3rd Edition, 2020	CBS Publishers and Dis tributers Pvt. Ltd.

3	Solid State Physics	S O Pillai	2018	New Age Internationa
4	Quantum Computing,	Parag K Lala	2020	McGraw Hill
Reference Books:				
1.	LASERS and Non-Linear Optics	B B Loud	--	New Age International
2.	Concepts of Modern Physics	Beiser A	6th ed., 2002	Mc Graw-Hill Education
3.	Introduction to Quantum Mechanics	Griffiths D J	2nd or 3rd ed., 2018	Pearson
4.	Introduction to Superconductivity	Tinkham M	2nd ed., 2004	Dover Publications
5.	Superconductivity – Basics and Applications	Mishra P K	2009	Ane Books
6.	Quantum Computing	Vishal Sahani	2007	McGrawHill Education
7.	Fundamentals of Photonics	Saleh B E A & Teich M C	3rd ed., 2019	Wiley
8.	Quantum Computation and Quantum Information	Nielsen M A & Chuang I L	10th Anniversary ed., 2010	Cambridge University Press

Course Outcomes: At the end of the course students should be able to:
CO1: Explain core quantum concepts and their computational relevance.
CO2: Analyze electronic behavior in metals and semiconductors for key material properties.
CO3: Discuss superconductivity phenomena and their role in quantum systems.
CO4: Describe radiation–matter interaction and photonic device operation.
CO5: Summarize fundamentals of quantum computing and predict simple circuit outcomes.

Weblinks and Video Lectures (e-resources)

1. NPTEL – Quantum Mechanics I (IIT Madras): https://nptel.ac.in/courses/115106066.
2. NPTEL – Physics: Introductory Quantum Mechanics (NOC): https://archive.nptel.ac.in/courses/115/104/115104096.
3. Solid State Physics – NPTEL (IIT Madras) https://nptel.ac.in/courses/115106127.
4. A Brief Course on Superconductivity – NPTEL IIT Guwahati (Prof. SaurabhBasu)
5. Playlist Introduction Video: https://www.youtube.com/watch?v=SHoGV-sezNI.
6. Full playlist available via the YouTube channel description or archive link.
7. Concepts in Magnetism and Superconductivity – NOC (IIT Kharagpur)Series start (Lecture 1): https://digimat.in/nptel/courses/video/115105131/L01.html.
8. Introduction to Photonics – NPTEL (IIT Madras, Prof. Balaji Srinivasan) Lecture 03 to Lecture 12 cover: Direct video link (start Lecture 03): https://nptel.ac.in/courses/108106135/03.
9. Semiconductor Optoelectronics – NPTEL (IIT Delhi, Prof. M. R. Shenoy)Direct video link (start relevant lecture): https://nptel.ac.in/courses/108108174/05.
10. Lecture 04 – Quantum Computing Basics: https://www.youtube.com/watch?v=-fttE1SzpD8.
11. . Lecture 08 – Quantum Gates and Circuits Part 1:https://www.youtube.com/watch?v=nGPr1QM_XrY.

Teaching Learning Process:	
1. Chalk and talk	2. Short Animations and Videos
3. Experimental Learning	4. Active based Learning
5. Hybrid Learning	6. Simulations and Interactive Simulations
7. ICT Based Learning	8. Self Learning using AI Tools

Active 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

Course Articulation Matrix of Applied Physics - Quantum Physics and Applications (CSE Stream)

COs / POs	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**
CO1	3	2	-	-	2	-	-	-	-	-	2
CO2	3	3	2	-	2	-	-	-	-	-	2
CO3	3	2	-	2	2	-	-	-	-	-	2
CO4	3	2	-	2	3	-	-	-	-	-	2
CO5	3	2	2	-	3	-	-	-	-	-	2

Academic Year: 2025-26	**Semester: I**	**Scheme: P25**
Course Title: **Introduction to AI and Applications**		
Course Code: **P25ETC103**	CIE Marks:**50**	CIE Weightage:**50%**
Teaching hours/week (L:T:P): **3:0:0**	SEE Marks:**50**	SEE Weightage:**50%**
Teaching hours of Pedagogy:**40**	Exam Hours: **3 Hrs**	
Credits:**3**		

Course learning Objectives:

CO1: Explain the concepts and types of artificial intelligence.
CO2: Illustrate basic machine learning methods for regression, classification and clustering. CO3: Identify real-world applications across different disciplines.
CO4: Make use of prompt engineering techniques to interact with generative AI tools. CO5: Outline recent trends in artificial intelligence and machine learning.

Unit 1	**8 Hours**

Introduction to Artificial Intelligence: Artificial Intelligence, How Does AI Work?, Advantages and Disadvantages of Artificial Intelligence, History of Artificial Intelligence, Types of Artificial Intelligence, Weak AI, Strong AI, Reactive Machines, Limited Memory, Theory of Mind, Self-Awareness, Is Artificial Intelligence Same as Augmented Intelligence and Cognitive Computing, Machine Learning and Deep Learning.

Machine Intelligence: Defining Intelligence, Components of Intelligence, Differences Between Human and Machine Intelligence, Agent and Environment, Search, Uninformed Search Algorithms, Informed Search Algorithms: Pure Heuristic Search, Best-First Search Algorithm (Greedy Search).

Knowledge Representation: Introduction, Knowledge Representation, Knowledge-Based Agent, Types of Knowledge.

Textbook Map: Chapter 1 (1.1-1.5), Chapter 3 (3.1-3.7.2), Chapter 4 (4.1-4.4)

Unit 2	**8 Hours**

Introduction to Prompt Engineering, Introduction to Prompt Engineering, The Evolution of Prompt Engineering, Types of Prompts, How Does Prompt Engineering Work?, Comprehending Prompt Engineering's Function in Communication, The Advantages of Prompt Engineering, The Future of LLM Communication.
Prompt Engineering Techniques for ChatGPT, Introduction to Prompt Engineering Techniques, Instructions Prompt Technique, Zero, One, and Few Shot Prompting, Self-Consistency Prompt.
Prompts for Creative Thinking: Introduction, Unlocking Imagination and Innovation.
Prompts for Effective Writing: Introduction, Igniting the Writing Process with Prompts.

Textbook Map: Chapters 1, 3, 4 & 5

Unit 3	**8 Hours**

Machine Learning: Techniques in AI, Machine Learning Model, Regression Analysis in Machine Learning, Classification Techniques, Clustering Techniques, Naïve Bayes Classification, Neural Network, Support Vector Machine (SVM).

Textbook Map: Chapter 2 (2.1-2.8)

Unit 4	**8 Hours**
Trends in AI: AI and Ethical Concerns, AI as a Service (AIaaS), Recent trends in AI, Expert System, Internet of Things, Artificial Intelligence of Things (AIoT).	
Textbook Map: Chapter 8 (8.1, 8.2, 8.4), Chapter 9 (9.1- 9.3)	
Unit 5	**8 Hours**
Robotics, Robotics-an Application of AI, Drones Using AI, No Code AI, Low Code AI. **Industrial Applications of AI:** Application of AI in Healthcare, Application of AI in Finance, Application of AI in Retail, Application of AI in Agriculture, Application of AI in Education, Application of AI in Transportation, AI in Experimentation and Multi-disciplinary research.	
Textbook Map: Textbook 1: Chapter 8 (8.3), Chapter 1 (1.7, 1.8, 1.10, 1.11) **Textbook 3: Chapter 3, Chapter 5 (5.1)**	

Suggested Learning Resources:				
Textbooks:				
1	Reema Thareja	Artificial Intelligence: Beyond Classical AI	Pearson Education	2023
2	Ajantha Devi Vairamani and Anand Nayyar	Prompt Engineering: Empowering Communication	1st Edition, CRC Press, Taylor & Francis Group	2024(DOI: https://doi.org/10.1201/9781032692319).
3	Saptarsi Goswami, Amit Kumar Das and Amlan Chakrabarti	"AI for Everyone – A Beginner's Handbook for Artificial Intelligence"	Pearson	2024
Reference Books:				
1.	Stuart Russell and Peter Norvig	Artificial Intelligence: A Modern Approach	4th Edition	Pearson Education, 2023
2	Elaine Rich, Kevin Knight, and Shivashankar B. Nair	Artificial Intelligence	-	McGraw Hill Education
3	Tom Taulli, Prompt Engineering for Generative AI	ChatGPT, LLMs, and Beyond	-	Apress, Springer Nature
4	Nilakshi Jain, Artificial Intelligence	Making A System Intelligent	First Edition	Wiley

Web links and Video Lectures (e-resources)
1. Elements of AI – *https://www.elementsofai.com* 2. CS50's Introduction to Artificial Intelligence with Python – Harvard *https://cs50.harvard.edu/ai/* 3. Google Machine Learning Crash Course – *https://developers.google.com/machine-learning/crash-course* 4. Learn Prompting (Open-Source Guide) – *https://learnprompting.org* 5. Google AI – Learn with Google AI *https://ai.google/education/* 6. Coursera – Machine Learning by Andrew Ng (Stanford University) *https://www.coursera.org/learn/machine-learning* 7. OpenAI Prompt Engineering Guide (for ChatGPT) *https://platform.openai.com/docs/guides/gpt-best-practices* *8.* Prompt Engineering for Developers – DeepLearning.AI + OpenAI *https://www.deeplearning.ai/short-courses/chatgpt-prompt-engineering-for-developers/* 9. Ethics in AI – Google Responsible AI Practices *https://ai.google/responsibilities/responsible-ai-practices/* 10. Google Teachable Machine (Train AI models visually without code) https://teachablemachine.withgoogle.com

Teaching-Learning Process (Innovative Delivery Methods):
The following are sample strategies that educators may adopt to enhance the effectiveness of the teaching- learning process and facilitate the achievement of course outcomes. - Flipped Classroom - Problem-Based Learning (PBL) - Case-Based Teaching
- Simulation and Virtual Labs - ICT-Enabled Teaching - Tool Demonstration

Academic Year: 2025-26	**Semester: I**	**Scheme: P25**
Course Title: **Introduction to Electrical Engineering**		
Course Code: **P25ESC1042**	CIE Marks:**50**	CIE Weightage:**50%**
Teaching hours/week (L:T:P): **3:0:0**	SEE Marks:**50**	SEE Weightage:**50%**
Teaching hours of Pedagogy:**40**	Exam Hours: **3 Hrs**	
Credits:**3**		

Course learning Objectives:

CO1: Explain the generation of power and the laws used in DC circuits.
CO2: Analyze single-phase and three-phase circuits.
CO3: Describe the construction, operation and applications of DC machines.
CO4: Describe the construction, operation and applications of transformers and induction motors.
CO5: Explain electricity billing and safety measures

Unit 1	**8 Hours**

Power Generation: Conventional and nonconventional energy sources. Single-line diagram of power supply system showing power station, transmission system and distribution system. Definition of power grid.

DC circuits: Ohm's law and Kirchhoff's laws, analysis of series, parallel and series-parallel circuits. Power and energy. Problems.

Unit 2	**8 Hours**

Single-Phase Circuits: Generation of single-phase system. Equation of AC voltage and current, average value, RMS value, form factor, peak factor and their relation [No derivations]. Voltage and current relationships in R, L and C circuits, concept of power, reactive power, apparent power and power factor, analysis of R-L, R-C and R-L-C series circuits, parallel circuits, illustrative examples.

Three-Phase Circuits: Generation of three-phase systems, star and delta (mesh) connections, relation between phase and line values of voltages and of currents of star and delta connections. Definition of balanced and unbalanced source and load. Power, reactive power and power factor. Problems with balanced loads.

Unit 3	**8 Hours**

DC Generator: Principle of operation, constructional details, induced emf expression, types of generators. Relation between induced emf and terminal voltage. Simple problems.

DC Motor: Principle of operation, back emf and its significance. Torque equation, types of motors, characteristics and speed control of DC shunt motor. Applications of DC motors. Simple problems.

Unit 4	**8 Hours**

Transformers: Introduction to transformers, necessity of transformer, principles of operation, constructional features of single-phase transformers. EMF equation, losses, variation of losses with respect to load. Calculation of efficiency at different loads.

Three-phase induction Motors: Definition of rotating magnetic field (without derivation), Principle of operation. Constructional features of squirrel cage type and wound rotor type induction motor. Slip and its significance, problems. Applications.

Unit 5	**8 Hours**

Domestic Wiring: Two-way and three-way control of loads.

Electricity Bill: Definition of "unit" used for consumption of electrical energy, power rating of common household appliances. Two-part electricity tariff.

Equipment Safety measures: Working principle of fuse and miniature circuit breaker (MCB), merits and demerits.

Personal safety measures: Electric shock, safety precautions to avoid shock. Earthing and types: Plate

earthing and pipe earthing.				
Suggested Learning Resources:				
Textbooks:				
1	B.L. Theraja	A textbook of Electrical Technology	S Chand and Company	Volume-1 Reprint Edition 2014
2	V. K. Mehta, Rohit Mehta	Principles of Electrical Engineering & Electronics	S. Chand and Company Publications,	2nd edition, 2015
Reference Books:				
1.	D. P. Kothari and I. J. Nagrath	Basic Electrical Engineering	McGraw Hill	4th edition, 2019
2	Rajendra Prasad	Fundamentals of Electrical Engineering	PHI	3rd edition, 2014
3	E. Hughes	Electrical Technology	Pearson	12th Edition, 2016
4	K. Vijayarekha	Basic Electrical and Electronics Engineering	Cengage	Reprint 2023
5	Harish C Rai	Handbook of Electrical Engineering formulae	CBS Publications	2018

Web links and Video Lectures (e-resources)

www.nptel.ac.in

(1) Principle of Electrical Sciences, Prof Sanjay Agrawal, Indira Gandhi National Open University.

(2) Electricity and Electrical Wiring, Dr. Antara Mahanta Barua, Krishna Kanta Handiqui State Open University, Guwahati.

Teaching-Learning Process (Innovative Delivery Methods):

The following are sample strategies that educators may adopt to enhance the effectiveness of the teaching- learning process and facilitate the achievement of course outcomes.

1. Technology Integration, 2. Collaborative Learning, 3. Flipped Classroom, 4. Visual Based Learning

Academic Year: 2025-26	Semester: I	Scheme: P25
Course Title: Introduction to Electronics and Communication Engineering		
Course Code: P25ESC1043/2043	CIE Marks: 50	CIE Weightage: 50
Teaching hours/week (L:T:P): 3:0:0	SEE Marks: 50	SEE Weightage:50
Teaching hours of Pedagogy: 40	Exam Hours: 3	
Credits: 3		

Prerequisite: Mathematics, physics, and chemistry

Course learning Objectives:

CO1: - To prepare students with fundamental knowledge/ overview in the field of Electronics and Communication Engineering.

CO2:-. To equip students with a basic foundation in electronic engineering required for comprehending the operation and application of electronic circuits, logic design, embedded systems, and communication systems.

CO3: -. Professionalism & Learning Environment: To inculcate in first-year engineering students an ethical and professional attitude by providing an academic environment inclusive of effective communication, teamwork, ability to relate engineering issues to a broader social Context, and life-long learning needed for a successful professional career.

Unit 1:	**Hrs: 8**

Power Supplies: Block Diagram, Rectifiers, Reservoir and Smoothing Circuits, Improved Ripple Filters, Full Wave Rectifiers, Bi Phase Rectifiers Circuits, Bridge Rectifier Circuits, Voltage Regulators, Output Resistance and Voltage Regulation, Voltage Multipliers, (Only Voltage Doubler) Switched Mode Power Supplies.

Amplifiers: Types of Amplifiers, Gain, Input and Output Resistance, Frequency Response, Bandwidth, Phase Shift, Negative Feedback.

Text 1: Page No: 117-128, 139-146

Self-Study Content: Multistage Amplifiers, Power Amplifiers.

Unit 2:	**Hrs:8**

Oscillators: Positive Feedback, Condition for Oscillations, Ladder Network Oscillator, Wein Bridge Oscillator, Single-Stage Astable Oscillator, Crystal Controlled Oscillators (Only Concepts, Working, and Waveforms. No Mathematical Derivations)

Operational Amplifiers: Operational Amplifier Parameters, Operational Amplifier Characteristics, Operational Amplifier Configurations, Operational Amplifier Circuits.

Text 1: Page No:179-186, 165-169, 171-175

Self-Study Content: Practical Operational Amplifier Circuits.

Unit 3:	**Hrs: 8**

Analog Communication Schemes: Introduction, Modern Communication System Scheme: Information Source and Input Transducer, Transmitter, Channel or Medium, Noise, Receiver, Concept of Modulation, Concept of Radio Wave Propagation (Ground, Space, Sky), Types of Communication Systems. **Modulation Schemes:** Amplitude Modulation, Angle Modulation, Advantages of Digital Communication Over Analog

Communication, Multiplexing, Digital Modulation Schemes: ASK, FSK, PSK, (Explanation with Waveform) Text 2: 1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 1.9, 1.12, 1.15, 2.2.1, 3.2.1, 6.1, 6.11, 6.12, 6.13, 6.15, 6.16.
Self-Study Content: Other Modulation Techniques.
Unit4:2 **Hrs:8**
Embedded Systems: Definition, Embedded Systems Vs General Computing Systems, Classification of Embedded Systems, Major Application Areas of Embedded Systems, Purpose of an Embedded System, Core of The Embedded System: Microprocessors, GPP Vs ASIP, Microcontrollers, Microprocessor Vs Microcontroller, DSP, RISC V/S CISC, Memory: ROM, Sensors, Actuators, LED, 7-Segment LED Display. Text 3: 1.1, 1.2, 1.4, 1.5, 1.6, 2.1.1.1-2.1.1.6, 2.2.1, 2.3.1, 2.3.2, 2.3.3.1, 2.3.3.2.
Self-Study Content: RAM, Optocoupler, Stepper motor.
Unit 5: **Hrs:8**
Boolean Algebra and Logic Circuits: Binary Numbers, Number Base Conversion- Binary, Decimal And Octal and Hexa Decimal Numbers and Vice-Versa, Complements-1's and 2's, Basic Definitions, Basic Theorems and Properties of Boolean Algebra, Boolean Functions, Canonical and Standard Forms, Digital Logic Gates. **Combinational Logic:** Introduction, Design Procedure, Adders- Half Adder, Full Adder. Text 4: 1.2, 1.3, 1.4, 1.5, 2.1, 2.3, 2.4, 2.5, 2.7, 4.1, 4.2, 4.3.
Self-Study Content: Other Combinational Circuits.

Suggested Learning Resources:

Textbooks:

	Title	Author	Year & Edition	Publisher
1.	Electronic Circuits Fundamentals & Applications	Mike Tooley	2020, 5th Edition,	Elsevier
2.	Communication Systems	S L Kakani and Priyanka Punglia	2017, 1st Edition	New Age International Publisher
3.	Introduction to Embedded Systems	K V Shibu	2019, 2nd Edition	McGraw Hill Education
4.	Digital Logic and Computer Design	M. Morris Mano	2017	Pearson Education

Reference Books:

1.	Electronic Devices and Circuit Theory	Robert L. Boylstad, Louis Nashelsky	2015,11th Edition	PHI
2.	Basic Electronics	D.P Kothari and I. J Nagarath	2014	McGraw Hill Education

Web links and Video Lectures (e-resources)
1. https://nptel.ac.in/courses/122106025 2. https://nptel.ac.in/courses/108105132

Course Outcomes: On completion of this course, students are able to:			
COs	**Course Outcomes** with ***Action verbs*** for the Course topics	**Bloom's Taxonomy Level**	**Program Outcome Addressed (PO #) with BTL**
CO1	**Analyze** the principles and applications of power supplies, amplifiers, oscillators for engineering applications.	**Analyse**	PO1, PO2, [L3]
CO2	**Analyse** and compare different modulation schemes evaluating their performance to various communication systems.	**Analyse**	PO2 [L4]
CO3	**Illustrate** the fundamentals of embedded systems demonstrating their purpose in developing various embedded applications	**Apply**	PO2 [L3]
CO4	**Apply** Boolean algebra and logic circuits to design an optimized digital circuit for the given specifications.	**Apply, Design**	PO2, PO3 [L3,L4]
CO5	**Design & Evaluate** for the performance of different communication systems, embedded systems and various circuit configurations.	**Design, Evaluate**	PO4, PO5 [L5]

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2
#1	3	2										3	2
#2		3											3
#3		3											3
#4		3	2										3
#5				2	2								

Active Based Learning (Suggested Activity in Class)/ Practical Based Learning (Example)
1. Flipped Classroom 2. Problem-Based Learning (PBL) 3. Case-Based Teaching 4. Simulation and Virtual Labs 5. Partial Delivery of course by Industry expert/ industrial visits 6. ICT-Enabled Teaching 7. Role Play

Academic Year: 2025-26	Semester: I	Scheme: P25
Course Title: **Programming in C**		
Course Code: **P25PSC1055**	CIE Marks:**50**	CIE Weightage:**50%**
Teaching hours/week (L: T: P): **3:0:0**	SEE Marks:**50**	SEE Weightage:**50%**
Teaching hours of Pedagogy:**40**	Exam Hours: **3 Hrs**	
Credits:**3**		

Course learning Objectives:

Course Learning Objectives: This course will enable the students

- To **understand the fundamentals of computing and the structure of C programs**, including computer languages, program development, and compilation process.
- To **apply data types, variables, operators, and expressions** to perform arithmetic, relational, and logical computations using appropriate syntax and precedence.
- To **implement control flow and modularity** in programs using decision-making, looping statements, arrays, strings, and functions.
- To **utilize pointers, dynamic memory allocation, and function calls** effectively to develop modular and reusable C programs.

To **analyze and design structured programs** using user-defined data types such as structures, unions, enumerations, and typedef for real-world problem-solving.

Unit 1	8 Hours

Introduction to Computing: Computer languages, Creating and Running Programs, System Development.

Overview of C: A Brief History of C, C Is a Middle-Level Language, C Is a Structured Language, C Is a Programmer's Language, Compilers Vs. Interpreters, The Form of a C Program, The Library and Linking, Separate Compilation, Compiling a C Program, C's Memory Map.

Expressions: The Basic Data Types, Modifying the Basic Types, Identifier Names, Variables, The Four C Scopes, Type Qualifiers, Storage Class Specifiers, Variable Initializations, Constants, Operators, Expressions.

Textbook Map: Textbook 2: Chapter 1: 1.3, 1.4, 1.5; Textbook 1: Chapter 1, 2

Unit 2	8 Hours

Console I/O: Reading and Writing Characters, Reading and Writing Strings, Formatted Console I/O, printf(), scanf().

Statements: True and False in C, Selection Statements, Iteration Statements, Jump Statements, Expression Statements, Block Statements.

Textbook Map: Textbook 1: Chapter 8, 3

Unit 3	8 Hours

Arrays and Strings: Single-Dimension Arrays, generating a Pointer to an Array, Passing Single-Dimension Arrays to Functions, Strings, Two-Dimensional Arrays, Multidimensional Arrays, Array Initialization, Variable - Length Arrays.

Pointers: What Are Pointers? Pointer Variables, The Pointer Operators, Pointer Expressions, Pointers and Arrays, Multiple, Indirection, Initializing Pointers.

Textbook Map: Textbook 1: Chapter 4, 5

Unit 4	8 Hours

Functions: The General Form of a Function, Understanding the Scope of a Function, Function Arguments, argc and argv—Arguments to main (), The return Statement, What Does main() Return? Recursion, Function

Prototypes, Declaring Variable Length Parameter Declarations, The inline Keyword.
Pointers (Contd…): Pointers to Functions, C's Dynamic Allocation Functions.

Textbook Map: Textbook 1: Chapter 5, Chapter 6

Unit 5	8 Hours

Structures, Unions, Enumerations, and typedef: Structures, Arrays of Structures, Passing Structure to Functions, Structure Pointers, Arrays and Structures within Structures, Unions, Bit-Fields, Enumerations, using size of to Ensure Portability, typedef.

Textbook Map: Textbook 1: Chapter 7

Suggested Learning Resources:

Textbooks:

1	Schildt, Herbert.	C the complete reference	4th Edition	Mc GrawHill.
2	Hassan Afyouni, Behrouz A. Forouzan	A Structured Programming Approach in C	4th Edition	Cengage

Reference Books:

1.	Brian W. Kernighan and Dennis M. Ritchie	The 'C' Programming Language	2nd Edition	Prentice Hall of India
2	Reema Thareja	Programming in C	3rd Edition	Oxford University Press, 2023

Web links and Video Lectures (e-Resources):

1. elearning.vtu.ac.in/econtent/courses/video/BS/15PCD23.html
2. Introduction to Programming in C [https://onlinecourses.nptel.ac.in/noc23_cs02/preview]
3. C for Everyone: Programming Fundamentals [https://www.coursera.org/learn/c-for-everyone]
4. Computer Programming Virtual Lab [https://cse02-iiith.vlabs.ac.in/exp/pointers/]
5. C Programming: The ultimate way to learn the fundamentals of the C language [https://www.pdfdrive.com/c-programming-the-ultimate-way-to-learn-the-fundamentals-of-the-c- language-e187584209.html]
6. C Programming: The Complete Reference [https://viden.io/knowledge/programming-in-c-language/attachment/28313/c-the-complete-reference-herbert-schildt-4th-edition-pdf/preview]
7. https://infyspringboard.onwingspan.com/web/en/app/toc/lex_auth_013843237039374336345 17_s hared/overview
8. C programming Tutorial: https://www.geeksforgeeks.org/c/c-programming-language/.

Teaching-Learning Process (Innovative Delivery Methods):

The following are sample strategies that educators may adopt to enhance the effectiveness of the teaching- learning process and facilitate the achievement of course outcomes.

1. Flipped Classroom
2. Problem-Based Learning (PBL)
3. Case-Based Teaching
4. Simulation and Virtual Labs
5. ICT-Enabled Teaching

Course Articulation Matrix

Course Outcomes (COs)	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	3	2	1	–	–	–	–	–	–	–	–
CO2	3	3	2	–	1	–	–	–	–	–	–
CO3	3	3	2	2	1	–	–	–	–	–	–

Academic Year: 2025-26	**Semester: I**	**Scheme: P25**
Course Title: **C Programming Laboratory**		
Course Code: **P25PSCL1065**	CIE Marks:**50**	CIE Weightage:**50%**
Teaching hours/week (L:T:P): **0:0:2**	SEE Marks:**50**	SEE Weightage:**50%**
Teaching hours of Pedagogy:**24**	Exam Hours: **3**	
Credits:**1**		

Course outcome

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

CO1: Develop programs in C to solve simple computational problems.

CO2: Make use of C language derived datatypes to solve simple real-world problems.

CO3: Build a document consisting of experiment setup, design, implementation and results with inferences.

Note:

1. The laboratory syllabus consists of PART-A and PART-B. While PART-A has 6 conventional experiments, PART-B has 6 typical open-ended experiments. The maximum marks for the laboratory course are 100.
2. Both PART-A and PART-B are considered for CIE and SEE.
3. Students have answer 1(one) question from PART-A and 1(one) question from PART-B.
   a. The questions set for SEE shall be from among the experiments under PART-A. It is evaluated for 70 marks out of the maximum 100 marks.
   b. The open-ended question set for SEE shall be any other open-ended question and not selected from the experiments under PART-A. It shall be evaluated for 30 marks.
4. For continuous internal evaluation, during the semester, classwork, the typical open-ended questions shall be from PART-B, and any other similar questions to enhance the skill of the students

PART – A CONVENTIONAL EXPERIMENTS

Note: Students must write the algorithm & flowchart for PART-A questions in the Record book

1.	A robot needs to find how far it must travel between two points on a 2D plane. Develop a C program to calculate the straight-line distance between the given coordinates.
2.	Develop a C program that takes a student's marks as input and displays their grade based on the following criteria: 90 and above: Grade A 75 to 89: Grade B 60 to 74: Grade C 50 to 59: Grade D Below 50: Grade F Choose a suitable control structure to implement this logic efficiently.
3.	Develop a C program that takes a unique identification input like PAN Number, AADHAR_Number, APAAR_Id, Driving License, Passport and checks it against a set of stored KYC records. Based on the input, display whether the individual is verified or not. Use an appropriate control structure to handle multiple possible ID matches. Assume all Unique identification is of integer type.
4.	A math app needs to determine the type of roots for a quadratic equation based on user input. Develop a C program to calculate and display the roots based on the given coefficients.
5.	A sensor in a robotic arm needs to calculate the angle of rotation in real-time, but the hardware doesn't support built-in trigonometric functions. Develop a C program to approximate the value of sin(x) using a

	series expansion method for improved performance.
6.	Develop a C program that accepts a course description string and a keyword from the user. Search whether the keyword exists within the course description using appropriate string functions. If found, display: "Keyword '<keyword>' found in the course description." Otherwise, display: "Keyword '<keyword>' not found in the course description."
7.	Develop a C program that takes marks for three subjects as input. Use a function to check if the student has passed (minimum 40 marks in each subject). Display the average and whether the student passed or failed.
8.	In an ATM system, two account balances need to be swapped temporarily for validation. Develop a C program that accepts two balances and uses a function with pointers to swap them. Display the balances before and after swapping.

PART – B

TYPICAL OPEN-ENDED EXPERIMENTS

Open-ended experiments are a type of laboratory activity where the outcome is not predetermined, and students are given the freedom to explore, design, and conduct the experiment based on the problem statements as per the concepts defined by the course coordinator. It encourages creativity, critical thinking, and inquiry-based learning.

1.	A college library has a digital bookshelf system where each book is assigned a unique Book ID. The bookshelf is organized in ascending order of Book IDs. Develop a C Program to quickly find whether a book with a specific Book ID is available in the shelf.
2.	A sports teacher has recorded the scores of students in a 100-meter race. To prepare the result sheet, the teacher wants the scores arranged in descending order (from highest to lowest). Develop a C program to sort the scores.
3.	A small warehouse tracks how many units of different products are shipped from multiple branches. Another dataset shows how much revenue each product generates per unit. Develop a C program which combines these datasets to calculate the total revenue generated by each branch.
4.	A basic mobile contact manager stores first and last names separately. For displaying full names in the contact list, you need to join them manually. Additionally, the system must check the length of each full name to ensure it fits the screen. Perform these operations by developing a C program without using built- in string functions.
5.	A currency exchange booth allows users to convert between two currencies. Before confirming the exchange, the system simulates a swap of the values to preview the result without actually changing the original data. In other cases, it updates the actual values. Develop a C program that implements both behaviours using Call by Value and Call by reference
6.	A local library needs to store and display details of its books, including title, author, and year of publication. Design a structure that can hold these details and develop a C program to display a list of all books entered.

Suggested Learning Resources: (Text Book/ Reference Book/ Manuals):

Textbook:

1. Hassan Afyouni, Behrouz A. Forouzan. "A Structured Programming Approach in C", 4th Edition, Cengage.

Reference books:

1. Schildt, Herbert. "C the complete reference", 4th Edition, Mc GrawHill.
2. Brian W. Kernighan and Dennis M. Ritchie, The 'C' Programming Language, 2nd edition, Prentice Hall of India.

Web links and Video Lectures (e-Resources):

1. Introduction to Programming in C [https://onlinecourses.nptel.ac.in/noc23_cs02/preview]
2. C for Everyone: Programming Fundamentals [https://www.coursera.org/learn/c-for-everyone]
3. Computer Programming Virtual Lab [https://cse02-iiith.vlabs.ac.in/exp/pointers/]
4. C Programming: The ultimate way to learn the fundamentals of the C language [https://www.pdfdrive.com/c-programming-the-ultimate-way-to-learn-the-fundamentals-of-the-c- language-e187584209.html]
5. C Programming: The Complete Reference [https://viden.io/knowledge/programming-in-c-language/attachment/28313/c-the-complete-reference-herbert-schildt-4th-edition-pdf/preview]

Teaching-Learning Process (Innovative Delivery Methods): The following are sample strategies that educators may adopt to enhance the effectiveness of the teaching- learning process and facilitate the achievement of course outcomes.

1. Engineering tool usage for the conduction of experiment
2. Demonstration through ICT tools
3. Use of virtual labs (https://www.vlab.co.in/)

Academic Year: 2025-26		
Course Title: Applied Physics Laboratory - Quantum Physics and Applications (CSE Stream) Semester: I/II		
Course Code:	**P25PHCSL107/207**	**Credit: 01**
Teaching hours/week (L: T:P):	**0:0:2**	**CIE Marks:50**
Teaching hours of Pedagogy:	**10-12 Lab slots**	**SEE Marks:50**

Course Learning Objectives:

- Identify the principles of quantum physics to perform and analyse laboratory experiments related to Engineering field.
- Setup or construct the circuit to perform experiments related to Engineering applications.
- Analyze the knowledge of mathematical sciences to calculate experimental result comparing with theory related to Engineering field.

PART–A: Fixed Set of Experiments	**24 Hours**

1. Determination of wavelength of LASER using **Diffraction Grating.**
2. Determination of acceptance angle and numerical aperture of the given **Optical Fiber**.
3. Study the Characteristics of a **Photo-Diode** and to determine the power responsivity/ Verification of Inverse Square Law of Light
4. Determination of **Planck's Constant** using LEDs/**Black-Body**.
5. Determination of **Fermi Energy** of Copper.
6. Determination of **Energy gap** of the given Semiconductor.
7. **Black-Box Experiment** (Identification of basic Electronic Components).
8. Resonance in **LCR circuit** and determination of coefficient of self induction.
9. Study the I-V Characteristics of a **Bipolar Junction Transistor** and hence determine α & β.
10. Determination of resistivity of a semiconductor by **Four Probe Method**.
11. Predicting the outputs of various combinations of single and two-qubit gates using **QUIRK** Quantum Simulator. a) https://www.quirk-e.dev/ b) https://algassert.com/quirk
12. Predicting the outputs of various combinations of single and two-qubit gates using **QISKIT**.
13. **Air-wedge / Newtons** to study the interference by the division of amplitude.
14. Experimental Data Analysis using **Spread Sheet**.

Course Outcomes: On completion of this course, students should be able to:

CO1: Apply the fundamental concepts of physics by performing laboratory experiments using electronic components and circuits.

CO2: Analyze and interpret experimental data, calculate errors and compare results with theoretical predictions to validate physical laws and engineering applications.

CO3: Demonstrate the use of simulation tools such as PHET, Spreadsheets and Tracker to model, visualize and investigate physical phenomena for engineering problem solving.

Suggested Learning Resources:

Textbooks:

	Title	**Author**	**Year & Edition**	**Publisher**
1.	Engineering Physics Practical	V Rajendran	Latest Edition	Tata McGraw Hill
2.	Practical Physics	S L Gupta, V Kumar	Latest Edition	Pragati Prakashan
Reference Books:				
1.	Applied Physics Laboratory Manual	R Arora	Latest Edition	S. Chand & Co.,
2.	Laboratory Experiments in Engineering Physics	D Chattopadhyay, P C Rakshit	Latest Edition	New Central Book Agency
3.	Learn Quantum Computation using Qiskit (Lab-Oriented Text)	H Abraham et al. (IBM Research)	2019, Open Access	Qiskit Textbook Project
4.	Spreadsheet Applications in Science Education	Thomas J Quirk	2nd Edition, 2015	Springer

Course Articulation Matrix of Applied Physics Laboratory
Quantum Physics and Applications (CSE Stream)

COs / POs	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**
CO1	3	2	-	-	-	-	-	-	-	-	-
CO2	2	3	-	2	-	-	-	-	2	-	-
CO3	1	2	-	-	3	-	-	-	1	-	2

Course Title:	**Communicative English – I (Common to all branches)**		
Course Code:	**P25ENG108**	**CIE Marks**	**50**
	Theory	**SEE Marks**	**50**
		Total Marks	**100**
Teaching Hours/Week (L:T:P:S)	**0:2:0:2**	**Exam Hours**	**02 Theory**
Total Hours of Pedagogy	**30 hours**	**Credits**	**01**

Module-1
Introduction to Communication Skills **6 Hours**

Introduction to communication, Meaning and process, Channels of communication, Elements of communication, Barriers to effective communication. Activities - Making introductions, Sharing personal information, Describing feelings and opinions.

Module-2
Listening Skills I **4 Hours**

Hearing vs. Listening, Types of listening, Determinants of good listening, Active listening process, Barriers to listening, Activities - Listening for pronunciation practice, Listening for personal communication, Listening for communication - language functions

Module-3 Speaking Skills I
6 Hours

Basics of speaking, Elements and Functions of speaking, structuring your speech, Focusing on fluency,
Homographs and Signpost words. Activities – Free Speech and Pick and Speak

Module-4 Reading Skills I
4 Hours

Developing reading as a habit, Building confidence in reading, improving reading skills, Techniques of reading - skimming and scanning. Activities - understanding students' attitudes towards reading,
countering common errors in reading, developing efficiency in reading.

Writing Skills I **4 Hours**

Improving writing skills, Spellings and punctuation, Letter and Paragraph writing. Activity – Writing your
personal story

Module-5: Body Language and Presentation Skills
6 Hours

Elements of body language, Types, Adapting positive body language, Cultural differences in body
language. 4 Ps in presentations, Overcoming the fear of public speaking, Effective use of verbal and nonverbal presentation techniques. Activity – Group presentations

Course Outcomes: On completion of this course, students will be able to,

CO1: Understanding elements of communication, barriers to effective communication, and channels of communication.

CO2: Learning determinants of good listening, active listening processes, and types of listening.

CO3: Mastering basics of speaking, structuring speeches, focusing on fluency, and overcoming fear of public speaking.

CO4: Developing efficiency in writing, understanding common errors, and practicing letter and paragraph writing

Textbooks and Reference Books:

1. Communication Skills by Sanjay Kumar and Pushpa Lata, Oxford University Press - 2015.
2. Everyday Dialogues in English by Robert J. Dixson, Prentice-Hall of India Ltd., 2006.
3. Developing Communication Skills by Krishna Mohan& Meera Banerjee (Macmillan)
4. The Oxford Guide to Writing and Speaking, John Seely, Oxford.
5. English Language Communication Skills - Lab Manual cum Workbook by Rajesh Kumar Singh, Cengage learning India Pvt Limited – 2018

CO – PO – PSO Matrix

CO	PO												PSO		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11		PSO1	PSO2	PSO3
CO1								1	3		2				
CO2									3		1				
CO3								1	3		2				
CO4					1				3		2				
CO															

Innovation and Design thinking

[As per Choice Based Credit System (CBCS) & OBE Scheme]

SEMESTER - I

Course Code:	**P25IDT109**	**Credits:**	**01**
Teaching Hours/Week (L:T:P):	**1:0:1**	**CIE Marks:**	**50**
Total Number of Teaching Hours:	**-**	**SEE Marks:**	**50**

Course objectives:

1) Understand a community-based challenge and perform research to analyze the problem.
2) Generate and evaluate solution ideas based on the problem analysis and select a feasible concept for prototyping.
3) Learn and apply appropriate rapid prototyping tools and techniques (e.g., Arduino, 3D printing, Figma, Onshape, etc.) to build a Proof of Concept (PoC).
4) Demonstrate their prototype solution through a structured presentation or demo, explaining the design decisions, functionality, and potential impact.

Unit - 1 <u>Problem Definition & Ideation</u> ● Problem Immersion & 5W1H Mind Mapping ● Root Cause (Fishbone) & User Journey Mapping ● Ideation (Design Sprint principles & SCAMPER).	6 Hrs
Unit - 2 <u>Product Roadmap & PoC Design</u> ● Low-Fidelity Wireframing & Information Architecture (IT) ● High-Fidelity Prototyping (IT) ● CAD Design - Part 1 (2D Sketching) (Circuit branches, Mech, Civil) ● CAD Design - Part 2 (3D Part modelling & Assembly) (Circuit branches)	6 Hrs
Unit - 3 <u>PoC Development</u> ● UI Design using Figma (IT) ● Backend Setup (Supabase) & Database Design (IT) ● Frontend Development - Flutter flow (IT) ● Basic Electronics and Simulation (Circuit branches) ● Arduino Basics (Circuit branches) ● Arduino Sensor integration (Circuit branches) ● Digital fabrication using Laser cutting and 3D printing (Mech/civil) ● woodworking (Mech/Civil)	6 Hrs
Unit - 4 <u>Prototype Demonstration</u> ● Prototype building Hackathon and Demo day.	6 Hrs
Students are given a community based problem statement on which the students work in teams to analyse the problem using design thinking methodology and build PoC to showcase their solution.	

ಸಾಂಸ್ಕೃತಿಕ ಕನ್ನಡ – ಕನ್ನಡ ಬಲ್ಲ ಮತ್ತು ಕನ್ನಡ ಮಾತೃಭಾಷೆಯ ವಿದ್ಯಾರ್ಥಿಗಳಿಗೆ ನಿಗದಿಪಡಿಸಿದ ಪಠ್ಯಕ್ರಮ

Course Title:	**ಸಾಂಸ್ಕೃತಿಕ ಕನ್ನಡ**		
Course Code:	**P25KSK110**	**CIE Marks**	**100**
Course Type (Theory/Practical /Integrated)	**Theory**	**SEE Marks**	**-**
		Total Marks	**100**
Teaching Hours/Week (L:T:P:S)	**0:2:0:0**	**Exam Hours**	**01 Theory**
Total Hours of Pedagogy	**15 hours**	**Credits**	**00**

Course Objectives : ಸಾಂಸ್ಕೃತಿಕ ಕನ್ನಡ ಪಠ್ಯದ ಕಲಿಕೆಯ ಉದ್ದೇಶಗಳು:

The course (P22KSK107/207) will enable the students,

೧. ಪದವಿ ವಿದ್ಯಾರ್ಥಿಗಳಾಗಿರುವುದರಿಂದ ಕನ್ನಡ ಭಾಷೆ, ಸಾಹಿತ್ಯ ಮತ್ತು ಕನ್ನಡದ ಸಾಂಸ್ಕೃತಿಯ ಪರಿಚಯ ಮಾಡಿಕೊಡುವುದು.

೨. ಕನ್ನಡ ಸಾಹಿತ್ಯದ ಪ್ರಧಾನ ಭಾಗವಾದ ಆಧುನಿಕ ಪೂರ್ವ ಮತ್ತು ಆಧುನಿಕ ಕಾವ್ಯಗಳನ್ನು ಸಾಂಕೇತಿಕವಾಗಿ ಪರಿಚಹಯಿಸುವುದು.

೩. ವಿದ್ಯಾರ್ಥಿಗಳಲ್ಲಿ ಸಾಹಿತ್ಯ ಮತ್ತು ಸಾಂಸ್ಕೃತಿಯ ಬಗ್ಗೆ ಅರಿವು ಹಾಗೂ ಆಸಕ್ತಿಯನ್ನು ಮೂಡಿಸುವುದು.

೪. ತಾಂತ್ರಿಕ ವ್ಯಕ್ತಿಗಳ ಪರಿಚಯವನ್ನು ಹಾಗೂ ಅವರುಗಳ ಸಾಧಿಸಿದ ವಿಷಯಗಳನ್ನು ಪರಿಚಯಿಸುವುದು.

೫. ಸಾಂಸ್ಕೃತಿಕ, ಜನಪದ ಹಾಗೂ ಪ್ರವಾಸ ಕಥನಗಳ ಪರಿಚಯ ಮಾಡಿಕೊಡುವುದು.

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

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

೧. ಸಾಂಸ್ಕೃತಿಕ ಕನ್ನಡವನ್ನು ಬೋಧಿಸಲು ತರಗತಿಯಲ್ಲಿ ಶಿಕ್ಷಕರು ಪ್ರಸ್ತುತ ಪುಸ್ತಕ ಆಧಾರಿಸಿ ಬ್ಲಾಕ್ ಬೋರ್ಡ್ ವಿಧಾನವನ್ನು ಅನುಸರಿಸುವುದು. ಪ್ರಮುಖ ಅಂಶಗಳ ಚಾರ್ಟ್‌ಗಳನ್ನು ತಯಾರಿಸಲು ವಿದ್ಯಾರ್ಥಿಗಳನ್ನು ಪ್ರೇರೇಪಿಸುವುದು ಮತ್ತು ತರಗತಿಯಲ್ಲಿ ಅವುಗಳನ್ನು ಚರ್ಚಿಸಲು ಅವಕಾಶ ಮಾಡಿಕೊಡುವುದು.

೨. ಇತ್ತೀಚಿನ ತಂತ್ರಜ್ಞಾನದ ಅನುಕೂಲಗಳನ್ನು ಬಳಸಿಕೊಳ್ಳುವುದು – ಅಂದರೆ ಕವಿ–ಕಾವ್ಯ ಪರಿಚಯದಲ್ಲಿ ಕವಿಗಳ ಚಿತ್ರಣ ಮತ್ತು ಲೇಖನಗಳು ಮತ್ತು ಕಥೆ ಕಾವ್ಯಗಳ ಮೂಲ ಅಂಶಗಳಿಗೆ ಸಂಬಂಧಪಟ್ಟ ಧ್ವನಿ ಚಿತ್ರಗಳು, ಸಂಭಾಷಣೆಗಳು, ಈಗಾಗಲೇ ಇತರ ವಿಮರ್ಶಕರು ಬರೆದಿರುವ ವಿಮರ್ಶಾತ್ಮಕ ವಿಷಯಗಳನ್ನು ಟಿಪಿಟಿ, ಡಿಜಿಟಲ್ ಮಾಧ್ಯಮಗಳ ಮುಖಾಂತರ ವಿಶ್ಲೇಷಿಸುವುದು.

೩. ನವೀನ ಮಾದರಿಯ ಸಾಹಿತ್ಯ ಬೋಧನೆಗೆ ಸಂಬಂಧಪಟ್ಟ ವಿಧಾನಗಳನ್ನು ಶಿಕ್ಷಕರು ವಿದ್ಯಾರ್ಥಿಗಳಿಗೆ ಅನುಕೂಲವಾಗುವ ರೀತಿಯಲ್ಲಿ ಅಳವಡಿಸಿಕೊಳ್ಳಬಹುದು.

Module-1 ಕನ್ನಡ ಸಂಸ್ಕೃತಿ ಮತ್ತು ಭಾಷೆ ಕುರಿತಾದ ಲೇಖನಗಳು (03 hours of pedagogy)

೧. ಕರ್ನಾಟಕ ಸಂಸ್ಕೃತಿ – ಹಂಪ ನಾಗರಾಜಯ್ಯ

೨. ಕರ್ನಾಟಕದ ಏಕೀಕರಣ : ಒಂದು ಅಪೂರ್ವ ಚರಿತ್ರೆ – ಜಿ. ವೆಂಕಟಸುಬ್ಬಯ್ಯ

೩. ಆಡಳಿತ ಭಾಷೆಯಾಗಿ ಕನ್ನಡ – ಡಾ. ಎಲ್. ತಿಮ್ಮೇಶ ಮತ್ತು ಪ್ರೋ. ವಿ. ಕೇಶವಮೂರ್ತಿ

Module-2 ಆಧುನಿಕ ಪೂರ್ವದ ಕಾವ್ಯ ಭಾಗ (03 hours of pedagogy)

೧. ವಚನಗಳು: ಬಸವಣ್ಣ, ಅಕ್ಕಮಹದೇವಿ, ಅಲ್ಲಮಪ್ರಭು, ಆಯ್ದಕ್ಕಿ ಮಾರಯ್ಯ, ಜೇಡರದಾಸಿಮಯ್ಯ, ಆಯ್ದಕ್ಕಿ ಲಕ್ಕಮ್ಮ.

೨. ಕೀರ್ತನೆಗಳು: ಅದರಿಂದೇನು ಫಲ ಇದರಿಂದೇನು ಫಲ – ಪುರಂದರದಾಸರು

೩. ತಲ್ಲಣಿಸದಿರು ಕಂಡ್ಯ ತಾಳು ಮನವೇ – ಕನಕದಾಸರು

೪. ತತ್ವಪದಗಳು: ಸಾವಿರ ಕೊಡಗಳ ಸುಟ್ಟು – ಶಿಶುನಾಳ ಶರೀಫಕಾರಕ ರೂಪಗಳು ಮತ್ತು ವಿಭಕ್ತಿ ಪ್ರತ್ಯಯಗಳು – ಸಪ್ತಮಿ ವಿಭಕ್ತಿ ಪ್ರತ್ಯಯ – (ಆ, ಅದು, ಅವು, ಅಲ್ಲಿ) Predictive Forms, Locative Case

Module-3 ಆಧುನಿಕ ಕಾವ್ಯಭಾಗ (03 hours of pedagogy)

೧. ಡಿವಿಜಿ ರವರ ಮಂಕುತಿಮ್ಮನ ಕಗ್ಗದಿಂದ ಆಯ್ದ ಕೆಲವು ಭಾಗಗಳು

೨. ಕುರುಡು ಕಾಂಚಾಣ: ದಾ.ರಾ. ಬೇಂದ್ರೆ

೩. ಹೊಸಬಾಳಿನ ಗೀತೆ: ಕುವೆಂಪು

Module-4 ತಾಂತ್ರಿಕ ವ್ಯಕ್ತಿಗಳ ಪರಿಚಯ (03 hours of pedagogy)

೧. ಡಾ. ಸರ್. ಎಂ. ವಿಶ್ವೇಶ್ವರಯ್ಯ: ವ್ಯಕ್ತಿ ಮತ್ತು ಐತಿಹ್ಯ – ಎ ಎನ್ ಮೂರ್ತಿರಾವ್

೨. ಕರಕುಶಲ ಕಲೆಗಳು ಮತ್ತು ಪರಂಪರೆಯ ವಿಜ್ಞಾನ: ಕರೀಗೌಡ ಬೀಚನಹಳ್ಳಿ

Module-5 ಸಾಂಸ್ಕೃತಿಕ, ಜನಪದ ಕಥೆ ಮತ್ತು ಪ್ರವಾಸ ಕಥನ **(03 hours of pedagogy)**
೧. ಯುಗಾದಿ: ವಸುಧೇಂದ್ರ ೨. ಮೆಗಾನೆ ಎಂಬ ಗಿರಿಜನ ಪರ್ವತ: ಹಿ.ಚಿ. ಬೋರಲಿಂಗಯ್ಯ
ಸಾಂಸ್ಕೃತಿಕ ಕನ್ನಡ ಕಲಿಕೆಯಿಂದ ವಿದ್ಯಾರ್ಥಿಗಳಿಗೆ ಆಗುವ ಪರಿಣಾಮಗಳು (Course Outcomes) CO1: ಕನ್ನಡ ಭಾಷೆ, ಸಾಹಿತ್ಯ ಮತ್ತು ಕನ್ನಡದ ಸಂಸ್ಕೃತಿಯ ಕುರಿತು ಅರಿವು ಮೂಡಿರುತ್ತದೆ. CO2: ಕನ್ನಡ ಸಾಹಿತ್ಯದ ಆಧುನಿಕ ಪೂರ್ವ ಮತ್ತು ಆಧುನಿಕ ಕಾವ್ಯಗಳು ಸಾಂಕೇತಿಕವಾಗಿ ಕಲಿತು ಹೆಚ್ಚಿನ ಓದಿಗೆ ಮತ್ತು ಜ್ಞಾನಕ್ಕೆ ಸ್ಫೂರ್ತಿ ಮೂಡತ್ತದೆ. CO3: ವಿದ್ಯಾರ್ಥಿಗಳಲ್ಲಿ ಸಾಹಿತ್ಯ ಮತ್ತು ಸಂಸ್ಕೃತಿಯ ಬಗ್ಗೆ ಅರಿವು ಹಾಗೂ ಆಸಕ್ತಿಯು ಹೆಚ್ಚಾಗುತ್ತದೆ. CO4: ತಾಂತ್ರಿಕ ವ್ಯಕ್ತಿಗಳ ಪರಿಚಯ ಹಾಗೂ ಅವರುಗಳ ಸಾಧಿಸಿದ ವಿಷಯಗಳನ್ನು ತಿಳಿದುಕೊಂಡು ನಾಡಿನ ಇನ್ನಿತರ ವ್ಯಕ್ತಿಗಳ ಬಗ್ಗೆ ತಿಳಿದುಕೊಳ್ಳಲು ಕೌತುಕತೆ ಹೆಚ್ಚಾಗುತ್ತದೆ. CO4: ಸಾಂಸ್ಕೃತಿಕ, ಜನಪದ ಹಾಗೂ ಪ್ರವಾಸ ಕಥನಗಳ ಪರಿಚಯ ಮಾಡಿಕೊಡುವುದು.
Assessment Details (both CIE and SEE) methods of CIE – MCQ, Quizzes, Open book test, Seminar or micro project) The weightage of Continuous Internal Evaluation (CIE) is 50% and for Semester End Exam (SEE) is50%. The student has to obtain a minimum of 40% marks individually both in CIE and 35% marks in SEE to pass. Theory Semester End Exam (SEE) is conducted for 50 marks (01 hour duration). Based on this grading will be awarded. **Continuous Internal Evaluation:** Two Tests each of **40 Marks (duration 01 hour)** Two assignments each of **10 Marks** **CIE methods / question paper is designed to attain the different levels of Blomm's taxonomy as per the outcome defined for the course.** **ಸೆಮಿಸ್ಟರ್ ಅಂತ್ಯದ ಪರೀಕ್ಷೆಯು ಈ ಕೆಳಗಿನಂತಿರುತ್ತದೆ – Semester end Exam** SEE will be conducted as per the scheduled timetable, with common question papers for the subject, 1. The question paper will have 25 questions. Each question is set for 02 marks. 2. SEE Pattern will be in MCQ Model for 50 marks. Duration of the exam is 01 hour.
ಪಠ್ಯ ಪುಸ್ತಕ: University Priscribed Textbook **ಸಾಂಸ್ಕೃತಿಕ ಕನ್ನಡ** ಡಾ. ಹಿ.ಚಿ. ಬೋರಲಿಂಗಯ್ಯ ಮತ್ತು ಎಲ್. ತಿಮ್ಮೇಶ, ಪ್ರಸಾರಾಂಗ, ವಿಶ್ವೇಶ್ವರಯ್ಯ ತಾಂತ್ರಿಕ ವಿಶ್ವವಿದ್ಯಾಲಯ, ಬೆಳಗಾವಿ

ಬಳಕೆ ಕನ್ನಡ - Balake Kannada (Kannada for Usage)

Course Title:	**ಬಳಕೆ ಕನ್ನಡ**		
Course Code:	**P25KSK110**	**CIE Marks**	**100**
Course Type (Theory/Practical /Integrated)	**Theory**	**SEE Marks**	**-**
		Total Marks	**100**
Teaching Hours/Week (L:T:P:S)	**0:2:0:0**	**Exam Hours**	**01 Theory**
Total Hours of Pedagogy	**15 hours**	**Credits**	**00**

Course objectives: ಬಳಕೆ ಕನ್ನಡ ಪಠ್ಯ ಕಲಿಕೆಯ ಉದ್ದೇಶಗಳು

The course (P22KBK107/207) will enable the students,

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

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

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

೧. ಬಳಕೆ ಕನ್ನಡವನ್ನು ತರಗತಿಯಲ್ಲಿ ಶಿಕ್ಷಕರು ಬೋಧಿಸಲು ವಿಟಿಯು ಸೂಚಿಸಿರು ಪಠ್ಯಪುಸ್ತಕವನ್ನು ಉಪಯೋಗಿಸಬೇಕು.

೨. ಪ್ರಮುಖ ಅಂಶಗಳ ಚಾರ್ಟ್‌ಗಳನ್ನು ತಯಾರಿಸಲು ವಿದ್ಯಾರ್ಥಿಗಳನ್ನು ಉತ್ತೇಜಿಸುವುದು ಮತ್ತು ತರಗತಿಯಲ್ಲಿ ಅವುಗಳನ್ನು ಚರ್ಚಿಸಲು ಅವಕಾಶ ಮಾಡಿಕೊಡುವುದು.

೩. ಪ್ರತಿ ವಿದ್ಯಾರ್ಥಿ ಪುಸ್ತಕವನ್ನು ತರಗತಿಯಲ್ಲಿ ಬಳಸುವಂತೆ ನೋಡಿಕೊಳ್ಳುವುದು ಮತ್ತು ಪ್ರತಿ ಪಾಠ ಮತ್ತು ಪ್ರವಚನಗಳ ಮೂಲ ಅಂಶಗಳಿಗೆ ಸಂಬಂಧಪಟ್ಟಂತೆ ಪೂರಕ ಚಟುವಟಿಕೆಗಳಿಗೆ ತೊಡಗಿಸತಕ್ಕದ್ದು.

೪. ಡಿಜಿಟಲ್ ತಂತ್ರಜ್ಞಾನದ ಮುಖಾಂತರ ಇತ್ತೀಚೆಗೆ ಡಿಜಿಟಲೀಕರಣಗೊಂಡಿರುವ ಭಾಷೆ ಕಲಿಕೆಯ ವಿಧಾನಗಳನ್ನು ಪಿಪಿಟಿ ಮತ್ತು ದೃಶ್ಯ ಮಾಧ್ಯಮದ ಮುಖಾಂತರ ಚರ್ಚಿಸಲು ಕ್ರಮಕೈಗೊಳ್ಳುವುದು. ಇದರಿಂದ ವಿದ್ಯಾರ್ಥಿಗಳನ್ನು ತರಗತಿಯಲ್ಲಿ ಹೆಚ್ಚು ಏಕಾಗ್ರತೆಯಿಂದ ಪಾಠ ಕೇಳಲು ಮತ್ತು ಅಧ್ಯಯನದಲ್ಲಿ ತೊಡಗಲು ಅನುಕೂಲವಾಗುತ್ತದೆ.

೫. ಭಾಷಾಕಲಿಕೆಯ ಪ್ರಯೋಗಾಲಯದ ಮುಖಾಂತರ ಬಹುಬೇಗ ಕನ್ನಡ ಭಾಷೆಯನ್ನು ಕಲಿಯಲು ಅನುಕೂಲವಾಗುವಂತೆ ಕಾರ್ಯಚಟುವಟಿಕೆಗಳನ್ನು ಮತ್ತು ಕ್ರಿಯಾ ಯೋಜನೆಗಳನ್ನು ರೂಪಿಸುವುದು.

Module-1 (03 hours of pedagogy)

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

Module-2 (03 hours of pedagogy)

೧. ನಾಮಪದಗಳ ಸಂಬಂಧಾರ್ಥಕ ರೂಪಗಳು, ಸಂದೇಹಾಸ್ಪದ ಪ್ರಶ್ನೆಗಳು ಮತ್ತು ಸಂಬಂಧವಾಚಕ ನಾಮಪದಗಳು – Possessive forms of nouns, dubitive question and Relative nouns

೨. ಗುಣ, ಪರಿಮಾಣ ಮತ್ತು ವರ್ಣಬಣ್ಣ ವಿಶೇಷಣಗಳು, ಸಂಖ್ಯಾವಾಚಕಗಳು Qualitative and Colour Adjectives, Numerals

೩. ಕಾರಕ ರೂಪಗಳು ಮತ್ತು ವಿಭಕ್ತಿ ಪ್ರತ್ಯಯಗಳು – ಸಪ್ತಮಿ ವಿಭಕ್ತಿ ಪ್ರತ್ಯಯ – (ಆ, ಅದು, ಅವು, ಅಲ್ಲಿ) Predictive Forms, Locative Case

Module-3 (03 hours of pedagogy)

೧. ಚತುರ್ಥಿ ವಿಭಕ್ತಿ ಪ್ರತ್ಯಯದ ಬಳಕೆ ಮತ್ತು ಸಂಖ್ಯಾವಾಚಕಗಳು – Dative Cases, and Numerals

೨. ಸಂಖ್ಯಾಗುಣವಾಚಕಗಳು ಮತ್ತು ಬಹುವಚನ ನಾಮರೂಪಗಳು – Ordinal numerals and Plural markers

೩. ನ್ಯೂನ / ನಿಷೇಧಾರ್ಥಕ ಕ್ರಿಯಾಪದಗಳು ಮತ್ತು ವರ್ಣ ಗುಣವಾಚಕಗಳು – Defective / Negative Verbs and Colour Adjectives

Module-4 (03 hours of pedagogy)

೧. ಅಪ್ಪಣೆ / ಒಪ್ಪಿಗೆ, ನಿರ್ದೇಶನ, ಪ್ರೋತ್ಸಾಹ ಮತ್ತು ಒತ್ತಾಯ ಅರ್ಥರೂಪ ಪದಗಳು ಮತ್ತು ವಾಕ್ಯಗಳು
Permission, Commands, encouraging and Urging words (Imperative words and sentences)

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

೩. "ಇರು ಮತ್ತು ಇರಲ್ಲ" ಸಹಾಯಕ ಕ್ರಿಯಾಪದಗಳು, ಸಂಭಾವ್ಯಸೂಚಕ ಮತ್ತು ನಿಷೇಧಾರ್ಥಕ ಕ್ರಿಯಾ ಪದಗಳು – Helping Verbs "iru and iralla", Corresponding Future and Negation Verbs

೪. ಹೋಲಿಕೆ (ತರತಮ), ಸಂಬಂಧ ಸೂಚಕ ಮತ್ತು ವಸ್ತು ಸೂಚಕ ಪ್ರತ್ಯಯಗಳು ಮತ್ತು ನಿಷೇಧಾರ್ಥಕ ಪದಗಳ ಬಳಕೆ – Comparative, Relationship, Identification and Negation Words

Module-5 (03 hours of pedagogy)

೧. ಕಾಲ ಮತ್ತು ಸಮಯದ ಹಾಗೂ ಕ್ರಿಯಾಪದಗಳ ವಿವಿಧ ಪ್ರಕಾರಗಳು –Differint types of forms of Tense, Time and Verbs

೨. ದ್, –ತ್, –ತು, –ಇತು, –ಆಗಿ, –ಅಲ್ಲ, –ಗ್, –ಕ್, ಇದೆ, ಕ್ರಿಯಾ ಪ್ರತ್ಯಯಗಳೊಂದಿ ಭೂತ, ಭವಿಷ್ಯತ್ ಮತ್ತು ವರ್ತಮಾನ ಕಾಲ ವಾಕ್ಯ ರಚನೆ – Formation of past, Future and Present Tense Sentences with Verb Forms

೩. Kannada Vocabulary List : ಸಂಭಾಷಣೆಯಲ್ಲಿ ದಿನೋಪಯೋಗಿ ಕನ್ನಡ ಪದಗಳು – Kannada Words in Conversation

Course Outcomes (Course Skill Set):
ಬಳಕೆ ಕನ್ನಡ ಪಠ್ಯದ ಕಲಿಕೆಯಿಂದ ವಿದ್ಯಾರ್ಥಿಗಳಿಗೆ ಆಗುವ ಅನುಕೂಲಗಳು ಮತ್ತು ಫಲಿತಾಂಶಗಳು :

At the end of the Couse, The Students will be able

CO1: To understand the necessity of learning of local language for comfortable life.

CO2: To Listen and understand the Kannada language properly.

CO3: To speak, read and write Kannada language as per requirement.

CO4: To communicate (converse) in Kannada language in their daily life with kannada speakers.

CO5: To speak in polite conservation.

(**Assessment Details – both CIE and SEE)**

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

Continuous Internal Evaluation:
Two Tests each of **40 Marks (duration 01 hour)**
Two assignments each of **10 Marks**

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

ಸೆಮಿಸ್ಟರ್ ಅಂತ್ಯದ ಪರೀಕ್ಷೆಯು ಈ ಕೆಳಗಿನಂತಿರುತ್ತದೆ – Semester end Exam (SEE)

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

1. The question paper will have 25 questions. Each question is set for 02 marks.
2. SEE Pattern will be in MCQ Model for 50 marks. Duration of the exam is 01 hour.

ಕನ್ನಡ ಕಲಿಕೆಗಾಗಿ ನಿಗದಿಪಡಿಸಿದ ಪಠ್ಯಪುಸ್ತಕ (Prescribed Textbook to Learn Kannada)

ಪಠ್ಯ ಪುಸ್ತಕ (Text book) :

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