COLLEGE OF ENGINEERING
Since 1982
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An Autonomous Institution

Bachelor of Engineering in AIML,CSE,CG,CD,ISE

Scheme and Syllabus
(2026 Scheme)

I Semester

MVJ College of Engineering, Bengaluru (Autonomous)
B.E. (CSE, ISE, AIML, CG, CD): Scheme 2026
Outcome-Based Education (OBE)and Choice-Based Credit System (CBCS)
(Applicable for 2026-27 admitted students)

Semester - I

Sl. No	Course	Course Code	Course Title	Teaching Learning and Scheme					Examination				Credits
				T I		L I	TW & SL	#TH/S	Duration in hours	CIE Marks	SEE Marks	Total Marks	
				L	T	P	SL						
1	ASC	MVJ26MATK11	Differential Calculus and Linear Algebra	56	0	0	64	120	04	50	50	100	04
2	ASC	MVJ26PHYS12	Quantum Physics and Applications	42	0	0	48	90	03	50	50	100	03
3	ESC	MVJ26CEDK13	Computer-Aided Engineering Drawing	24	0	24	42	90	03	50	50	100	03
4	ESC	MVJ26ESCS14	Fundamentals of Digital Electronics	42	0	0	48	90	03	50	50	100	03
5	PSC	MVJ26CPSS15	Programming in C	42	0	0	48	90	03	50	50	100	03
6	PSCL	MVJ26CPSSL16	C-Programming Lab	0	0	28	02	30	02	50	50	100	01
7	ASCL	MVJ26PHYSL17	Applied Physics Lab-CSE Stream	0	0	28	02	30	02	50	50	100	01
8	SDCL	MVJ26IDTKL18	Innovation and Design Thinking Lab (Project-based learning)	0	0	28	02	30	02	50	50	100	01
9	HSMS	MVJ26KSKK19/ MVJ26KBKK19	Samskrutika Kannada/ Balake Kannada	14	0	0	16	30	01	50	50	100	01
10	AEC	MVJ26SKSK110	Soft Skills	14	0	0	16	30	--	100	---	100	PP
11	SDCL	MVJ26SKL111	AI skill lab	0	0	28	2	30	3	50	50	100	01
												TOTAL	21

ASC-Applied Science Course, **IC** – Integrated Course (Practical Course Integrated with Theory Course), PSC-Programme Specific Course, **ESC**- Engineering Science Courses, **ETC**- Emerging Technology Course, **AEC**- Ability Enhancement Course, **NCMC**: Non-Credit Mandatory Course, **PP**: (Pass/Pass) is assigned to a noncredit course. "PP" represents a 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. **PLC(IC)**- Programming Language Course (Integrated Course), **AEC/SDC**- Ability Enhancement Course/Skill Development course, **TD/PSB**- Teaching Department / Paper Setting Board, **HSMS**-Humanity, Social Science and management Course, **S- (SAAE)** Students' Academic Activity Engagement Hours, **CIE** –Continuous Internal Evaluation, **SEE**-Semester End Examination, **SDCL** – Skill Development Course Lab, TH/S-Total Hours per Semester, TW&SL-Team Work and self-Learning.

B.E, Semester I, Common to all Engineering courses

Semester: I			
Differential Calculus & Linear Algebra			
Course Code:	MVJ26MATK11	**Scheme**	2026
Type of Course	ASC	**Semester**	I
Teaching Hours/Week (L: T: P)	4:0:0	**CIE Marks**	50
Total Hours of Pedagogy (L: T:P:SL &TW)	56:0:0:64	**SEE Marks**	50
Credits	4	**Total Marks**	100
Examination type (SEE)	Theory	**Exam Hours**	3

Course Objectives:

This course will give ability to:

- Familiarize the importance of calculus associated with one variable and two variables for engineering.
- Analyse engineering problems applying Ordinary Differential Equations.
- Apply linear algebra techniques to solve systems of linear equations

Syllabus

Differential calculus of one variable and two variables with applications in engineering. Polar curves, angle between curves, pedal equations, curvature and radius of curvature. Taylor's and Maclaurin's series, indeterminate forms and L'Hospital's rule. Partial differentiation, total derivatives, maxima and minima of functions of two variables and Jacobians. Ordinary Differential Equations of first and higher order, including exact, linear, Bernoulli, Clairaut and related equations. Linear algebra involving rank of matrices, consistency and solution of systems of linear equations, eigenvalues and eigenvectors and numerical methods for determining dominant eigenvalues.

Course Plan

Module I

Differential Calculus

Sl. No	Topics to be covered	Hours required
1	Polar curves, angle between the radius vector and the tangent.	**12 Hrs**
2	Angle between the polar curves.	
3	Pedal equations.	
4	Curvature and radius of curvature in Cartesian form.	
5	Curvature and radius of curvature in Polar form.	
6	Curvature and radius of curvature in Parametric form and Pedal form.	

Module II

Power Series Expansions, Indeterminate Forms and Multivariable Calculus

Sl. No	Topics to be covered	Hours required
1	Infinite series expansion of a function of a single variable using Taylor's and Maclaurin's series.	**10 Hrs**

2	Indeterminate forms – L Hospital's rule(with limits $1^{\infty}, 0^{0}, \infty^{0}$).	
3	Partial differentiation, total derivative - differentiation of composite functions.	
4	Maxima and minima for a function of two variables.	
5	Jacobian of function of three variables.	

Module III

Ordinary Differential Equations (ODE) of First Order

Sl. No	Topics to be covered	Hours required
1	Exact differential equations.	**12 Hrs**
2	Reducible to exact differential equations-Integrating factors (Type 2 and Type 3).	
3	Linear and Bernoulli's differential equations.	
4	Orthogonal trajectories in Cartesian and Polar form.	
5	Non-linear differential equations: Introduction to general and singular solutions, equations solvable for p $\left(p = \frac{dy}{dx}\right)$.	
6	Clairaut's equations.	
7	Differential equations reducible to Clairaut's equations.	

Module IV

Ordinary Differential Equations (ODE) of Higher Order

Sl. No	Topics to be covered	Hours required
1	Higher-order linear ODEs with constant coefficients.	**10 Hrs**
2	Homogeneous and non-homogeneous differential equations.	
3	Method of variation of parameters to solve non linear differential equations.	
4	Cauchy's and Legendre's homogeneous differential equations.	

Module V

Linear Algebra - I

Sl. No	Topics to be covered	Hours required
1	Rank of a matrix using Echelon form.	**12 Hrs**
2	Consistency of system of linear equations.	
3	Solving system of linear equations using Gauss elimination method and Gauss Seidel method.	
4	Eigen values and Eigen vectors of a matrix.	
5	Rayleigh Power Method to determine the dominant eigen value of a matrix.	

Textbooks:

1. B.S. Grewal, "Higher Engineering Mathematics", Khanna Publishers, 44th Ed., 2021.
2. E. Kreyszig, "Advanced Engineering Mathematics", John Wiley & Sons, 10th Ed., 2018.
3. G.B. Gururajachar, "Calculus and Linear Algebra", Academic Excellent Series Publications, Ed., 2018-2019.

Reference Books:

1. B.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. David C Lay, Linear Algebra and its Applications, "Pearson Publishers", 4th Ed., 2018.
4. Gilbert Strang, "Linear Algebra and its Applications", Cengage Publications, 4th Ed., 2022.

Other References:

1. NPTEL course : Geometry of Curves and Surfaces by Prof. Abhijit Pal, IIT Kanpur. https://nptel.ac.in/courses/111104765
2. NPTEL course : Engineering Mathematics – I, By Prof. Jitendra Kumar, IIT Kharagpur. https://nptel.ac.in/courses/111105121
3. NPTEL course : Differential Equations for Engineers, by Prof. Srinivasa Rao Manam, IIT Madras. https://nptel.ac.in/courses/111106100
4. NPTEL course: Linear Algebra is a foundational subject in Mathematics, by PROF. Pranav Haridas, Kerala School of Mathematics. https://nptel.ac.in/courses/111106135

Course Outcomes:

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

CO1: Apply foundational concepts of calculus and differential equations to analyse geometric properties of curves, solve first and higher-order ordinary differential equations and model physical phenomena in science and engineering.

CO2: Apply the principles of linear algebra to solve systems of linear equations, determine eigenvalues and eigen vectors and analyse real-world problems such as traffic flow.

CO3: Demonstrate the applications of electrical engineering and allied engineering science using modern ICT tools.

CO-PO Mapping:

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	3	3									2
CO2	3	3									2
CO3	3	3									2

High-3: Medium-2: Low-1

Evaluation Method:

Continuous Internal Evaluation (CIE):

- Three Internal Tests will be conducted for 50 marks each and average of best two will be taken. The student should score minimum 30% marks of the average test score to avoid NSSR. (A).
- Alternative Assessment Tools (AAT) should be a project / Quiz / Seminar cum Presentation / other suitable alternate assessment methods for 30 marks. Two evaluations will be conducted (B).
- Two Assignments for 10 marks each and the sum of both the assignments will be taken for 20 Marks (C).

Final CIE Marks will be calculated as (A + B + C) / 2 for 50 marks.

Semester End Examination (SEE):

The question paper consists of two parts, A and B.

Part A: Consists of 10 questions (2 questions from each module) of 2 marks each.

Part B: The question paper should have 10 questions. Each question carries 16 marks. There should be 2 questions from each module, with a maximum of 2 subdivisions. Students have to answer any 5 questions choosing one full question from each module.

The SEE Theory marks of 100 will be scaled down to 50.

The Final mark for the course is sum of the CIE and SEE Marks.

Course delivery methods		Assessment methods	
1	Chalk and Talk	1	IA tests
2	PPT and Videos	2	Open Book Assignments (OBA)
		3	AAT (Quiz, Project)
		4	Semester End Examination

B.E, Semester I (CSE, AIML, CSE (Data Science), ISE, CSD)

Semester: I			
QUANTUM PHYSICS AND APPLICATIONS			
Course Code	MVJ26PHYS12	**Scheme**	2026
Type of Course	ASC	**Semester**	I
Teaching Hours/Week (L: T: P)	3:0:0	**CIE Marks**	50
Total Hours of Pedagogy (L: T:P:SL &TW)	42:0:0:48	**SEE Marks**	50
Credits:	3	**Total Marks**	100
Examination type (SEE)	Theory	**Exam Hours**	3

Course Objectives:

- To understand the principles of quantum mechanics.
- To understand the properties of metals and superconductors.
- To understand the principles of quantum computing and quantum gates.
- To study the essentials of photonics for engineering applications.
- To study the basics of statistics and application of Physics in animation.

Syllabus Summary

The syllabus spans a wide range of modern physics concepts and their applications in computing.

Module-I: It begins with the foundations of quantum mechanics, including wave-particle duality, uncertainty principle, Schrödinger equation, and quantum states.

Module-II: It explores the physics of metals and superconductors, highlighting electron behaviour, conductivity, and phenomena like the Meissner effect and SQUIDs.

Module-III: Quantum computation is introduced through qubits, Bloch sphere, operators, and quantum gates, leading to entanglement and Bell states.

Module-IV: The section focuses on radiation–matter interaction, lasers, applications in ranging, optical fiber and optical fiber communication systems.

Module-V: The syllabus connects physics to computing and animation, covering statistical methods, error analysis, Monte Carlo simulations, and physics-based animation principles.

Overall, it blends theory, derivations, numerical problem-solving, and real-world applications.

Module I: Quantum Mechanics

Sr. No.	Topics to be covered	Hours required
1	Introduction to Wave-Particle Duality, de Broglie equations	**9 Hours**
2	Heisenberg's Uncertainty Principle and Applications	
3	Principle of Complementarity, Wave Function and Born Interpretation	
4	Time-Independent Schrödinger Equation for 1D	
5	Particle in a 1D Infinite Potential Well	
6	Expectation Values, Eigenfunctions & Eigenvalues	
7	Waveforms, Probabilities; Numerical Problems	

Module II: Electrical Properties of Metals

Sr. No.	Topics to be covered	Hours required
1	Failures of Classical Free Electron Theory, Matthiessen's Rule	**8 Hours**
2	Quantum Free Electron Theory	
3	Density of States	

4	Fermi Energy, Fermi Factor; Temperature and Energy dependent variations of fermi factor	
5	Superconductivity: Basics and Fundamental Properties	
6	BCS Theory & Types of Superconductors	
7	Applications: SQUIDs, Maglev; Numerical Problems	
Module III: Quantum Computing		
Sr. No.	Topics to be covered	Hours required
1	Moore's Law and its Limitations	**9 Hours**
2	Classical Vs Quantum Computation	
3	Qubit Basics; Dirac Notation	
4	Entanglement (Bell State); Bloch Sphere Representation	
5	Types of Qubits	
6	Operators, Quantum Gates (Single Qubit)	
7	Two-Qubit Gates- Numerical Problems	
8	Applications of Quantum Computing in AI	
Module IV: Photonics		
Sr. No.	Topics to be covered	Hours required
1	LASER, Interaction of Radiation with Matter, Einstein's A&B Coefficients	**8 Hours**
2	Prerequisites and Conditions for Lasing Action	
3	Semiconductor Diode LASER- GaAs Laser	
4	Applications of Laser: LiDAR and Laser Range Finder	
5	Optical Fiber- Critical angle, NA, and acceptance angle- Numerical Problems	
6	V-Number and Modes of Optical Fiber- Numerical Problems	
7	Optical Fiber Losses and Attenuation- Numerical Problems	
8	Applications of Optical Fiber: Point-to-Point Communication	
Module V: Physics of Statistics and Animation		
Sr. No.	Topics to be covered	Hours required
1	Error Analysis Fundamentals	**8 Hours**
2	Statistics in Error Analysis	
3	Probability Distributions	
4	Monte Carlo Method	
5	Physics of Animation – Foundations	
6	Motion and Timing in Animation	
7	Motion Graphs and Character Animation	
8	Numerical Problems	

Textbooks:

1. SP Basavaraju, "Engineering Physics", 2019.
2. S. O. Pillai, "Solid State Physics", New Age International
3. Parag K Lala, "Quantum Computing", McGraw Hill, 2020.
4. Wilson Labriola, "Physics of Animation", CRC Press, Taylor & Francis Group, 2026.

Reference Books:

1. S Mani Naidu, Pearson, "Engineering Physics", Fourteenth Impression, 2024.
2. Beiser, A., "Concepts of Modern Physics" (6th ed.), 2002, McGraw-Hill Education.

3. Griffiths, D. J., "Introduction to Quantum Mechanics", (2nd or 3rd ed.). Pearson., 2018
4. Tinkham, M. "Introduction to Superconductivity", 2nd ed.). Dover Publications, 2004.
5. Satyendra Sharma and Jyotsna Sharma, Pearson, "Engineering Physics", 2018.
6. S L Kakani, Shubra Kakani, "Engineering Physics", 3rd Edition, CBS Publishers and Distributers Pvt. Ltd., 2020,
7. Mishra, P. K. "Superconductivity – Basics and Applications". Ane Books, 2009
8. Ghatak, A., & Thyagarajan, K. "Optical Electronics. Oxford University Press", 2005,
9. Saleh, B. E. A., & Teich, M. C. "Fundamentals of Photonics", 3rd ed., Wiley, 2019.
10. Nielsen, M. A., & Chuang, I. L. "Quantum Computation and Quantum Information", (10th Anniversary ed.). Cambridge University Press., 2010.
11. Vishal Sahani, "Quantum Computing", McGraw Hill Education, 2007 Edition.

Other References:

Web links 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. A Brief Course on Superconductivity – NPTEL IIT Guwahati (Prof. Saurabh Basu)
4. Playlist Introduction Video: https://www.youtube.com/watch?v=SHoGV-sezNI
   Full playlist available via the YouTube channel description or archive link.
5. Concepts in Magnetism and Superconductivity – NOC (IIT Kharagpur) Series start (Lecture 1): https://digimat.in/nptel/courses/video/115105131/L01.html
6. 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
7. Lecture 32 – Superconducting Qubits (includes Charge Qubit / Cooper-Pair Box) https://www.youtube.com/watch?v=iYo8ALJ-Mls

Course Outcomes:

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

CO1: Apply quantum principles like wave–particle duality, uncertainty, Schrödinger equation, and particle confinement to microscopic systems.

CO2: Analyze electrical conduction in metals, Fermi energy, and superconductivity with applications in advanced materials.

CO3: Describe qubits, quantum gates, entanglement, and computation principles, highlighting limitations of classical VLSI systems.

CO4: Explain lasers, optical fiber, and photonic devices.

CO5: Apply error analysis and statistical methods in Animation physics applications.

CO-PO Mapping

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	3	3	-	2	-	-	-	-	-	-	-
CO2	3	3	-	2	-	-	-	-	-	-	-
CO3	3	2	1	2	2	-	-	-	-	-	-
CO4	3	2	1	2	2	-	-	-	-	-	1
CO5	2	3	1	3	2	-	-	-	-	-	1

High-3: Medium-2: Low-1

Evaluation Method:

Continuous Internal Evaluation (CIE):

Three Internal Tests will be conducted for 50 marks each and average of best two will be taken. The student should score minimum 30% marks of the average test score to avoid NSSR. **(A).**

- Alternative Assessment Tools (AAT) should be a project / Quiz/ Seminar cum Presentation / other suitable alternate assessment methods for 30 marks. Two evaluations will be conducted **(B).**
- Two Assignments for 10 marks each and the sum of both the assignments will be taken for 20 Marks **(C).**
- **Final CIE Marks will be calculated as (A+B+ C)/2 for 50 marks**

Semester End Examination (SEE):

The question paper consists of two parts, A and B.

Part A: Consists of 10 questions (2 questions from each module) of 2 marks each.

Part B: The question paper should have 10 questions. Each question carries 16 marks. There should be 2 questions from each module, with a maximum of 2 subdivisions. Students have to answer any 5 questions choosing one full question from each module.

The SEE Theory marks of 100 will be scaled down to 50.

The Final mark for the course is sum of the CIE and SEE Marks.: 50+50=100

Course delivery methods		Assessment methods	
1	Chalk and talk	**1**	IA tests
2	PPT and Videos	**2**	Open Book Assignments (OBA)
3	Flipped Classes	**3**	Semester End Examination
4	Practice session		
5	Virtual Labs (if present)		

Semester: I			
Computer-Aided Engineering Drawing (Common to All)			
Course Code	MVJ26CEDK13	Scheme	2026
Type of Course	ESC	Semester	I
Teaching Hours/Week (L: T: P)	2:0:2	CIE Marks	50
Total Hours of Pedagogy (L: T:P:SL &TW)	24-0-24-42	SEE Marks	50
Credits:	03	Total Marks	100
Examination type (SEE)	Practical	Exam Hours	03

Course Objectives:

CO 1: To understand the basic principles and conventions of engineering drawing

CO 2: To use drawing as a communication mode

CO 3: To generate pictorial views using CAD software

CO 4: To understand the development of surfaces

CO 5: To visualize engineering components

Syllabus

This 40-hour course blends manual and CAD engineering graphics across five modules. Students master 2D drafting and orthographic projections of points, lines, and planes, right regular solids resting on the HP, 3D isometric projections, and surface developments and covers multidisciplinary engineering applications.

Course Plan

Module I

Sr. No	Topics to be covered	Hours required
1	Significance of Engineering drawing, BIS Conventions of Engineering Drawing, Free hand sketching of engineering drawing, Scales. Introduction to Computer Aided Drafting software, Co-ordinate system and reference planes HP, VP	**9** -Hrs
2	RPP & LPP of 2D/3D environment. Selection of drawing sheet size and scale. Commands and creation of Lines, coordinate points, axes, polylines, square, rectangle, polygons, splines, circles, ellipse, text, move, copy, off-set, mirror, rotate, trim, extend, break, chamfer, fillet and curves. In AUTOCAD	
3	Introduction to Orthographic projections: Orthographic projections of points in 1st and 3rd quadrants. Orthographic projections of points (Placed in First quadrant only).	
4	Introduction to Orthographic projections: Orthographic projections of points in 1st and 3rd quadrants. Orthographic projections of lines	
5	Introduction to Orthographic projections: Orthographic projections of points in 1st and 3rd quadrants. Orthographic projections of lines in AUTOCAD	
6	Orthographic projections of planes viz triangle, square, rectangle, pentagon, hexagon, and circular laminae (Placed in First quadrant only using the change of	

	position method)	
7	Orthographic projections of planes viz triangle, square, rectangle, pentagon, hexagon, and circular laminae (Placed in First quadrant only using the change of position method)	
Module II		
Sr. No	**Topics to be covered**	**Hours required**
1	Orthographic Projection of Solids: Orthographic projection of right regular solids (Solids Resting on HP only): Prisms Pyramids	**9 -** Hrs
2	Orthographic projection of right regular solids (Solids Resting on HP only): Pyramids (triangle, square, rectangle, pentagon, hexagon)	
3	Orthographic projection of right regular solids (Solids Resting on HP only): Pyramids (triangle, square, rectangle, pentagon, hexagon) - In AUTOCAD	
4	Orthographic projection of right regular solids (Solids Resting on HP only) : Cylinders: Cones	
5	Orthographic projection of right regular solids: Cylinders, Cones - In AUTOCAD	
6	Orthographic projection of right regular solids (Solids Resting on HP only): Cubes &Tetrahedron. And In AUTOCAD	
Module III		
Sr. No	**Topics to be covered**	**Hours required**
1	Isometric Projections: Isometric scale, Isometric projection of hexahedron (cube),	**8 - Hrs**
2	Right regular prisms, pyramids, cylinders, cones and spheres. In AUTOCAD	
3	Isometric projection of combination of two simple solids.	
4	Conversion of simple isometric drawings into orthographic views. Problems on applications of Isometric projections of simple objects / engineering components	
5	Conversion of simple isometric drawings into orthographic views. Problems on applications of Isometric projections of simple objects / engineering components In AUTOCAD	
Module IV		
Sr. No	**Topics to be covered**	**Hours required**
1	Development of Lateral Surfaces of Solids: Development of lateral surfaces of right regular prisms on HP only	**8-** Hrs
2	Development of lateral surfaces of right regular prisms in AUTOCAD	
3	Development of lateral surfaces of right regular cylinders, pyramids and cones	

	resting with base on HP only.	
4	Development of lateral surfaces of right regular cylinders, pyramids and cones resting with base on HP only. In AUTOCAD	
5	Development of lateral surfaces of their frustums and truncations.	
6	Problems on applications of development of lateral surfaces like funnels and trays	

Module V

Sr. No	Topics to be covered	Hours required
1	Multidisciplinary Applications & Practice (For CIE Only): Free hand Sketching; True free hand, Guided Free hand, Roads, Buildings, Utensils, Hand tools & Furniture's etc	**8-** Hrs
2	Drawing Simple Mechanisms; Bicycles, Tricycles, Gear trains, Ratchets, two-wheeler cart &Four-wheeler carts to dimensions etc	
3	Electric Wiring and lighting diagrams; Like, Automatic fire alarm, Call bell system, UPS system, Basic power distribution system using suitable software	
4	Basic Building Drawing; Like, Architectural floor plan, basic foundation drawing, steel structures- Frames, bridges, trusses using Auto CAD or suitable software.	
5	Electronics Engineering Drawings- Like, Simple Electronics Circuit Drawings, practice on layers concept.	
6	Graphs & Charts: Like, Column chart, Pie chart, Line charts, Gantt charts, etc. using Microsoft Excel or any suitable software.	

Textbooks:

1. K. R. Gopalakrishna, & Sudhir Gopalakrishna: Textbook of Computer Aided Engineering Drawing, 39th Edition, Subash Stores, Bangalore,2017
2. S.N. Lal, & T Madhusudhan, "Engineering Visualisation," 1st Edition, Cengage, Publication
3. Parthasarathy N. S., Vela Murali, "Engineering Drawing", Oxford University Press,2015.

Reference Books:

1. Bhatt, N.D., Engineering Drawing: Plane and Solid Geometry, 53rd edition, Charotar Publishing House Pvt. Limited, 2019.
2. Chris Schroder, Printed Circuit Board Design using AutoCAD, Newnes,1997.

Other References:

https://www.youtube.com/watch?v=ZfIbyb2dKBE
https://www.youtube.com/watch?v=TzEeWr6gymo
https://www.youtube.com/watch?v=o06q-JshbPk
https://www.youtube.com/watch?v=oFix5mUFuAA
https://www.youtube.com/watch?v=2jXB6MKjaY0
https://www.youtube.com/watch?v=qQkMuABT4iQ

Course Outcomes:

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

CO 1: Apply drafting fundamentals and CAD tools to create accurate 2D engineering drawings using BIS conventions, geometric commands, and coordinate systems.

CO 2: **Formulate orthographic projections** of points, lines, and planar surfaces located in different quadrants and positions relative to the principal planes.

CO 3: **Construct projections of right regular solids** resting on the horizontal plane, demonstrating an understanding of spatial orientation and visibility.

CO 4: **Generate isometric drawings and surface developments** to visualize 3D object combinations and map out flat patterns for sheet metal applications.

CO 5: **Sketch multidisciplinary engineering diagrams** spanning civil, electrical, electronic, and mechanical systems using manual freehand techniques and software tools.

CO-PO Mapping

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	3	2			3	1	1	1	3		2
CO2	3	2			3	1	1	1	3		2
CO3	3	2			3	1	1	1	3		2
CO4	3	3			3	1	1	1	3		1
CO5	3	2			3			1	3		2

High-3: Medium-2: Low-1

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) and that for SEE minimum

passing marks is 35% of the maximum marks (18 marks). A student shall be deemed to have satisfied the

academic requirements and earned the credits allotted to each subject/ course if the student secures not less

than 35% (18 Marks out of 50) in the semester-end examination (SEE), and a minimum of 40% (40 marks out of 100) in the sum of the CIE (Continuous Internal Evaluation) and SEE (Semester End Examination)

taken together.

Continuous Internal Evaluation (CIE)

- CIE shall be evaluated for max. marks of 100 and later the same shall be scaled down to 50 marks as detailed below:
- CIE component should comprise the Continuous evaluation of drawing work of students as and

when the Modules are covered based on the detailed weightage.

Module	Max. Marks Weightage	Evaluation Weightage in marks	
		Computer display and print out (a)	Sketching (b)
Module 1	20	15	05
Module 2	20	15	05
Module 3	20	15	05
Module 4	20	15	05
Module 5	20	5	15
Total	100	65	35
Consideration of Class work		Total of [(a) + (b)] = 100 Scaled down to 30 Marks	

At least two Tests covering two modules each are to be conducted for 50 marks, and the average marks are to be scaled down to **20 Marks**.

- The final CIE = Class work marks (30) + Test marks (20)

Semester End Examination (SEE)

- SEE shall be conducted and evaluated for a maximum of 100 marks. Marks obtained shall be accounted for, SEE final marks, reducing it by 50%
- *Questions are to be set preferably from the Question bank.*
- **Related to Module-1**: One full question can be set either from "***points & lines***" or "***planes***".
- Evaluation shall be carried jointly by both examiners.
- Scheme of Evaluation: *To be defined by the examiners jointly, and the same shall be submitted along with the question paper.*
- One full question shall be set from each of the modules from Modules 1,2,3, and 4 as per the tabled weightage details. ***The marks can be awarded as per the detailed weightage below.***

Module	Max. Marks Weightage	Evaluation Weightage in marks	
		Computer display and print out (a)	Sketching (b)
Module 1	20	00	20
Module 2	30	30	00
Module 3	25	25	00
Module 4	25	25	00

Total	100	80	20
Consideration of Class work		Total of (a) + (b) ÷ 2 = Final SEE marks	

B.E, I Semester, CSE and allied branches

Semester: I			
Fundamentals of Digital Electronics			
Course Code:	MVJ26ESCS14	Scheme	2026
Type of Course	PCC	Semester	I
Teaching Hours/Week (L: T: P)	3:0:0	CIE Marks:	50
Total Hours of Pedagogy (L: T:P:SL &TW	42:0:0:48	SEE Marks:	50
Credits:	4	Total Marks	100
Examination type (SEE)	Theory	Exam Hours	3

Course Objectives:

This course will give ability to:

- Understand fundamental characteristics of semiconductor devices.
- Make use of simplifying techniques in the design of combinational circuits.
- Illustrate combinational and sequential digital circuits.
- Demonstrate the use of flipflops and design registers and counters.

Syllabus

Fundamentals of Digital Electronics subject introduces the basics of semiconductor devices, diodes, transistors, and MOSFETs, then builds into number systems, Boolean algebra, and logic simplification techniques. It covers digital logic gates, combinational circuits, and sequential circuits like flip-flops, registers, and counters. By the end, students gain the ability to design and analyze both combinational and sequential digital systems for practical electronic applications.

Course Plan

Module I

Sr.No	Topics to be covered	Hours required
1	Diodes and Their Application: Introduction, Characteristics and Parameters	**8 Hrs**
2	Diode Approximation, DC Load Line Analysis.	
3	Bipolar Junction Transistors: Introduction, BJT Voltages & Currents, BJT Amplification	
4	BJT Switching, Common Base Characteristics, Common Emitter Characteristics	
5	MOSFETS: Enhancement MOSFETs, Depletion MOSFETs	

Module II

Sr. No	Topics to be covered	Hours required
1	Digital Systems and Binary Numbers: Digital Systems, Numbering System (Binary, Octal, Decimal and Hexadecimal)	**8 Hrs**
2	Number Base Conversion – (Binary to Decimal, Hexadecimal And Vice Versa)	
3	1's and 2's Complement Operation, Signed Binary Numbers-Arithmetic Addition and Subtraction, Binary Logic	
4	Boolean Algebra: Basic Definitions, Basic Theorems	
5	Properties of Boolean Algebra, Boolean Functions, Canonical and Standard Forms	

Module III

Sr. No	Topics to be covered	Hours required

1	Digital Logic Gates: (Excluding Extension to Multiple Inputs, Positive and Negative Edge) NAND and NOR As Universal Gates (Excluding Multilevel Presentation).	**8 Hrs**
2	Karnaugh maps: Minimum forms of switching functions, two and three variable Karnaugh maps, Four variable Karnaugh maps	
3	Quine-McClusky Method: Determination of prime implicants, The prime implicant chart.	

Module IV

Sr. No	Topics to be covered	Hours required
1	Combinational Logic: Introduction, Combinational Circuits, Design Procedure	**8 Hrs**
2	Binary Adder- Subtractor, Decimal Adder, Magnitude Comparator	
3	Decoders, Encoders	
4	Multiplexers, Demultiplexers.	

Module V

Sr. No	Topics to be covered	Hours required
1	Sequential logic circuits: Introduction, Sequential Circuits	**8 Hrs**
2	Storage Elements: Latches, Flip-Flops (SR, JK,T and D)	
3	Registers, Shift Registers	
4	Ripple counters, Synchronous Counters.	

Textbooks:

1. David A Bell, "Electronic Devices and Circuits", Oxford University Press, 5th Edition, 30th Impression, 2025.
2. M.Morris Mano and Michael D.Ciletti, Digital Design - With an Introduction to the Verilog HDL, VHDL and System Verilog, Pearson Education Inc, 6th Edition, 2024.
3. Charles H Roth and Larry L Kinney, "Fundamentals of Logic Design", Cengage Learning, 2019

Reference Books:

1. Donald P Leach, Albert Paul Malvino & Goutam Saha, "Digital Principles and Applications", Tata McGraw Hill, 8th Edition, 2015
2. Anil K Maini, Varsha Agarwal, "Electronic Devices and Circuits", Wiley, 2012

Other References:

1. Digital Electronic Circuits, By Prof. Goutam Saha, IIT Kharagpur
nptel.ac.in/courses/108105132

Course Outcomes:

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

CO1: Apply the working principles, fundamental characteristics of various semiconductor devices like diodes and transistors in basic electronic circuits. .

CO2: Apply number system conversions and Boolean algebra to design and implement basic combinational logic circuits

CO3: Design basic combinational and sequential circuits using the fundamental principles of digital systems.

CO4: Analyse the fundamental concepts of electronic circuits and digital systems for their role in building basic electronic applications.

CO-PO Mapping

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

High-3: Medium-2: Low-1

Evaluation Method

Continuous Internal Evaluation (CIE):

- Three Internal Tests will be conducted for50markseach and average of three will be taken. The student should score minimum 30% marks of the average of the three tests to avoid NSSR. **(A)**.
- Alternative Assessment Tools (AAT) are used to complete a project / Quiz/Seminar cum Presentation/ other suitable alternate assessment methods for 30 marks. Two evaluations will be conducted **(B)**.
- TwoAssignmentsfor10markseachandthesumofboththeassignmentswillbetakenfor20 Marks **(C)**.

Final CIE Marks will be calculated as (A+B+ C)/2 for 50 marks.

Semester End Examination (SEE):

The question paper consists of two parts, A and B.

Part A: Consists of 10 questions (2 questions from each module) of 2 marks each.
Part B: The question paper should have 10 questions. Each question carries 16 marks. There should be 2 questions from each module, with a maximum of 2 subdivisions. Students have to answer any 5 questions choosing one full question from each module.

The SEE Theory marks of 100 will be scaled down to 50.

The Final mark for the course is sum of the CIE and SEE Marks.

Course delivery methods		Assessment methods	
1	Chalk and Talk	1	IA tests
2	PPT and Videos	2	Open Book Assignments (OBA)/ Lab Project
3	Flipped Classes	3	Lab Test
4	Practice session/Demonstrations in Labs	4	Semester End Examination
5	Virtual Labs (if present)		

B.E, Semester I (CSE, ISE, AIML, CG, CD)

Semester: I			
Programming in C			
Course Code	MVJ26CPSS15	Scheme	2026
Type of Course	PSC	Semester	I
Teaching Hours/Week (L: T:P)	3:0:0	CIE Marks	50
Total Hours of Pedagogy (L: T:P:SL&TW)	42:0:0:48	SEE Marks	50
Credits	3	Total Marks	100
Examination type (SEE)	Theory	Exam Hours	3

Course Objectives:

This course will give ability to:

- Understand the basics of C programming language.
- Analyse and solve programming problems using appropriate constructs and techniques in C.
- Implement decision-making and looping constructs for solving problems.
- Explore various function types including recursive and nested functions for real world problem.
- Perform file operations on text and binary files such as reading, writing, and updating.

Syllabus

Computer architecture fundamentals, processor, memory and I/O devices, system and application software, compilers and interpreters, high and low-level languages, algorithms, flowcharts and pseudocode, basic C programming structure, tokens, identifiers, variables, data types, constants and console I/O, operators and expressions, control flow and looping statements, functions and modular programming, parameter passing, storage classes, scope and lifetime of variables, arrays and multidimensional arrays, string processing and manipulation, pointers and pointer-based array access, file handling and sequential/random file access, structures and unions, user-defined data types, structures with pointers and functions, self-referential structures, enumerations, command-line arguments, library functions, macros and the C preprocessor.

Course Plan

Module I

Basics of Computer Architecture

Sr. No	Topics to be covered	Hours required
1	Basics of Computer Architecture: Processor, Memory, Input& Output devices.	8 - Hrs
2	Application Software & System software: Compilers, interpreters, High level and low-level languages.	
3	High-level and low-level languages; role of compilers and interpreters.	
4	Introduction to Algorithms: Flow chart, Algorithms	
5	Pseudo code (bubble sort, linear search, Fibonacci sequence, Compute factorial of n - algorithms and pseudocode).	
6	Basic structure of C program: Character set, Tokens, Identifiers in C	
7	Variables and Data Types, Constants, Console IO Operations, Input/ Output statements.	

Module II

Operators Expressions and Control Flow Statements

Sr.	Topics to be covered	Hours

No		required
1	Operators and Expressions: Expressions and Arithmetic Operators, Relational and Logical Operators	8 - Hrs
2	Conditional operator, size of operator, Assignment operators and Bitwise Operators, Operators Precedence.	
3	Control Flow Statements: Conditional branching statements.	
4	Unconditional Branching using goto statement	
5	While Loop, Do While Loop, For Loop, Break and Continue statements. Sample programs covering control flow).	

Module III

Functions and Storage classes

Sr. No	Topics to be covered	Hours required
1	Working with functions: Introduction to modular programming	8 - Hrs
2	Functions, formal parameters, actual parameters Pass by Value	
3	Union, Storage Classes, Scope and lifetime of variables, sample programs using functions.	
4	Storage Classes: Automatic Variables, External (Global) Variables, Static Variables	

Module IV

Arrays Strings and Pointer

Sr. No	Topics to be covered	Hours required
1	Arrays: Defining an Array, types of arrays, array operations.	8- Hrs
2	Processing an Array, Passing Arrays to Functions, Multidimensional Arrays.	
3	String processing: String declaration, string operations	
4	string manipulation functions, string sorting and searching.	
5	Pointers: Basics of Pointers, declaring pointers, accessing data though pointers	
6	NULL pointer, array access using pointers	
7	pass by reference effect, sample programs covering pointers.	

Module V

File Operations and Structures Unions

Sr. No	Topics to be covered	Hours required
1	File Operations: open, close, read, write, append	10 - Hrs
2	Sequential access and random access to files: In built file handling functions (rewind (), fseek(), ftell(), feof(), fread(), fwrite()), sample programs covering files.	
3	Structures and Unions: Defining a Structure, Processing a Structure	
4	User-Defined Data Types (typedef), Structures and Pointers	
5	Passing Structures to Functions, Self-Referential Structure, Unions	
6	Some Additional Features Of C: Enumerations, Command Line Parameter	
7	More About Library Functions, Macros, The C Preprocessor.	

Textbooks:

1. Gottfried B.S, "Programming with C", Schaum Series,2/e, Tata McGraw Hill.
2. E. Balagurusamy, Programming in ANSI C, 8/e, McGraw Hill.
3. Asok N Kamthane, "Programming in C", 3/e, Pearson.
4. Anita Goel, Computer Fundamentals, Pearson.
5. Byron S. Gottfried, "Theory and Problems Of Programming With C", Mcgraw -Hill

Reference Books:

1. Anita Goel and Ajay Mittal," Computer fundamentals and Programming in C", Pearson.
2. Brian W. Kernighan and Dennis M. Ritchie "C Programming Language ", Pearson
3. Rajaraman V," Computer Basics and Programming in C ", PHI.
4. Yashavant P, Kanetkar, Let us C, BPB Publications.

Other References: (NPTEL/SWAYAM. Any Other):

1. NPTEL Course: Introduction to Programming in C, Prof. Satyadev Nandakumar, IIT Kanpur - https://nptel.ac.in/courses/106104128
2. NPTEL Course: The Joy of Computing using Python / Programming related C fundamentals as supplementary practice - https://nptel.ac.in/courses/106106145
3. SWAYAM / NPTEL: Problem Solving through Programming in C, IIT Kharagpur - https://nptel.ac.in/courses/106105171

Course Outcomes:

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

CO1: Demonstrate understanding of basic computer architecture, software types, and structured programming concepts including flowcharts, algorithms, and pseudocode.

CO2: Apply C programming fundamentals such as variables, data types, operators, control flow statements, and console I/O to develop simple programs.

CO3: Design modular programs using functions, recursion, arrays, structures, unions, and storage classes, with appropriate scope and lifetime management.

CO4: Implement and manipulate arrays, strings, and pointers for data processing tasks including sorting, searching, and string operations.

CO5: Develop file-handling programs using sequential and random-access techniques, and utilize advanced C features like macros, enumerations, and command-line parameters for robust application development.

CO-PO Mapping:

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2
CO1	3	2	-	-	2						2	2	2
CO2	3	3	2	-	3							2	2
CO3	3	3	2	-	2						2	2	2
CO4	3	3	3	-	3				2	2	2	2	2
CO5	3	3	3	-	2	1	2	1	1	-	2	2	2

High-3: Medium-2: Low-1

Evaluation Method

Continuous Internal Evaluation (CIE):

- Three Internal Tests will be conducted for 50 marks each and average of three will be taken. The student should score minimum 30% marks of the average of the three tests to avoid NSSR. (A).
- Alternative Assessment Tools (AAT) are used to complete a project / Quiz/ Seminar cum Presentation / other suitable alternate assessment methods for 30 marks. Two evaluations will be conducted (B).
- Two Assignments for 10 marks each and the sum of both the assignments will be taken for 20 Marks (C).

Final CIE Marks will be calculated as (A+B+ C)/2 for 50 marks.

Semester End Examination (SEE):

The question paper consists of two parts, A and B.

- Part A: Consists of 10 questions (2 questions from each module) of 2 marks each.
- Part B: The question paper should have 10 questions. Each question carries 16 marks. There should be 2 questions from each module, with a maximum of 2 subdivisions. Students have to answer any 5 questions choosing one full question from each module.

The SEE Theory marks of 100 will be scaled down to 50.

The Final mark for the course is sum of the CIE and SEE Marks.

Course delivery methods		Assessment methods	
1	Chalk and Talk	1	IA tests
2	PPT and Videos	2	Open Book Assignments (OBA)/ Lab Project
3	Flipped Classes	3	Lab Test
4	Practice session/Demonstrations in Labs	4	Semester End Examination

Semester: I

C-Programming Lab

Course Code	MVJ26CPSSL16	Scheme	**2026**
Type of Course	PSCL	Semester	**I**
Teaching Hours/Week (L:T:P)	0:0:2	CIE Marks	**50**
Total Hours of Pedagogy (L:T:P:SL&TW)	0:0:28:2	SEE Marks	**50**
Credits	1	Total Marks	**100**
Examination type (SEE)	Practical	Exam Hours	**3**

Course Objectives:

This course will give the ability to:

- Understand and apply basic programming constructs in C, including variables, data types, operators and control structures, to solve real-world problems.
- Apply mathematical and algorithmic techniques to solve problems of engineering applications.
- Demonstrate proficiency in debugging, testing and validating C programs to ensure correctness, efficiency and robustness across various application domains.
- Implement modular programs using functions, pointers, arrays, strings, structures and files as covered in Programming in C.

Guidelines/ Specific Requirements, if any:

Implement all the programs in C Programming Language on Windows/Linux OS.

Sl. No.	Experiments List
1.	a. Write a C program to read a set of numbers and find sum and average of numbers. b. Write a C program to find the largest and smallest among set of numbers.
2.	Develop a C program that takes a student's marks as input and displays the grade: 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.	b. Write a program to generate the Fibonacci sequence up to n terms. c. Write a program to compute the factorial of a given number
4.	A math app needs to determine the type of roots of a quadratic equation based on user input. Develop a C program to calculate and display the roots for the given coefficients.
5.	Write a program using functions to determine whether a given number is prime. Also check whether it is palindrome.
6.	Develop a C program that accepts a course description string and a keyword from the user. Search whether the keyword exists in the course description using appropriate string functions. If found, display: Keyword found in the course description. Otherwise, display: Keyword not found in the course description.
7.	Develop a C program that takes marks of three subjects as input. Use a function to check whether 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.

9.	A college library has a digital bookshelf in which each book is assigned a unique Book ID. The bookshelf is organized in ascending order of Book IDs. Develop a C program to find whether a book with a specific Book ID is available on the shelf. Perform both linear search and binary search.
10.	A sports teacher has recorded the scores of students in a 100-meter race. To prepare the result sheet, the scores must be arranged in descending order (highest to lowest). Develop a C program to sort the scores.
11.	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 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.
12.	Develop a C program using structures to store student details (Name, USN and marks) and to write and read these records from a file.
13.	Develop a C program to sort an array of student names in alphabetical order and to search for a given name using string operations.

Course Outcomes:

The student will be able to:

CO1: Apply fundamental programming concepts in C to solve real-world problems involving mathematical computations, data validation and decision-making logic.

CO2: Utilize modular programming techniques including user-defined functions and pointer operations to enhance code reusability and maintainability in systems like ATM validation and currency exchange simulations.

CO3: Integrate algorithmic thinking and problem-solving skills to develop optimized solutions for tasks involving data sorting, searching and conditional logic.

CO4: Develop proficiency in debugging and testing C programs to ensure accurate output and efficient performance across diverse application scenarios.

CO-PO Mapping:

High-3: Medium-2: Low-1

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

Evaluation Method

Continuous Internal Evaluation (CIE):

- **Weekly Evaluation for 30 Marks:** Weekly evaluation should be conducted for every experiment. Marks of each evaluation includes Preparedness / Observation (6 Marks) + Experiment Conduction/ Execution (9 Marks) + Viva Voce (9 Marks) + Record Book (6 Marks) for each experiment. All weekly marks are added and scaled to 30 marks **(A).**

- Two CIE tests for 20 Marks each should be conducted and averaged to 20 Marks. The student should score minimum 30% in the average test marks (i.e. 6 marks) to avoid NSSR. (**B).**

Final CIE Marks of practical should be calculated as A+B for 50 marks

Semester End Examination (SEE) for Practical:

The SEE of practical is evaluated for 50 marks, distributed as follows:

- Experiment Conduction with Results: 40 marks
- Viva Voce: 10 marks
- **Total 50 marks (Y)**

The Final mark for the SEE is X+Y of total 100 marks

Course delivery methods		Assessment methods	
1	Chalk and talk	1	Lab Test
2	Practice session/Demonstrations in Labs	2	Semester End Examination

B.E, Semester I (CSE, AIML, CSE (Data Science), ISE, CSD)

Semester: I			
APPLIED PHYSICS LAB-CSE STREAM			
Course Code:	**MVJ26PHYSL17**	**Scheme**	**2026**
Type of Course	**ASCL**	**Semester**	**I**
Teaching Hours/Week (L: T: P)	**0:0:2**	**CIE Marks**	**50**
Total Hours of Pedagogy (L: T:P:SL &TW	**0:0:28:2**	**SEE Marks**	**50**
Credits:	**1**	**Total Marks**	**100**
Examination type (SEE)	**Practical**	**Exam Hours**	**3**

Course Objectives:

- Apprehend the concepts of interference and diffraction of light, fermi energy, resonance, dielectrics,
- Understand the principles of operations of optical fibre and semiconductor devices.
- Understand the importance of measurement procedure, honest recording and representation of data, reproduction of results.
- Utilize modern computational and Quantum simulation tools, including spreadsheets and PHET interactive simulations, for modeling, visualization, statistical analysis, and interpretation of physical phenomena.
- Enhance scientific reasoning, problem-solving abilities, and technical report-writing skills through experimental investigations and result analysis.

Syllabus

Laboratory Experiments (FIXED SET OF EXPERIMENTS)

1. Determination of wavelength of LASER using Diffraction Grating.
2. Determination of acceptance angle and numerical aperture of the given Optical Fiber.
3. Determination of resistivity of a semiconductor by Four Probe Method
4. Determination of dielectric constant of the material of capacitor by Charging and Discharging method.
5. Study the Characteristics of a Photodiode and to determine the power responsivity
6. Determination of Plank's Constant using LEDs / Blackbody
7. Determination of Fermi Energy Copper.
8. Interference by the division of amplitude (Air-wedge/Newton's Rings)
9. Black-Box Experiment (Identification of basic Electronic Components)
10. Study the I-V Characteristics of a Bipolar Junction Transistor and hence determine α and β.
11. Resonance in LCR circuit and hence determine the coefficient of self-inductance.
12. Determine the Energy Gap of the given semiconductor.
13. Verification of Stefan's Law.

14. Step Interactive Physical Simulations.
15. Study of motion using spread Sheets
16. Study of Application of Statistics using spread sheets
17. PHET Interactive
18. Quantum gates simulation (Quirk: Quantum Circuit Simulator)

Note:

1. At least ten laboratory experiments must be conducted.
2. Minimum one simulation experiment is mandatory and should be conducted either in the computer lab for the entire batch or on dedicated systems in the physics lab.

Evaluation Method:

Continuous Internal Evaluation (CIE):

On completion of every experiment/program in the laboratory, the students shall be evaluated, and marks shall be awarded on the same day. The 30 marks are for conducting the experiment and preparation of the laboratory record, the other 20 marks shall be for the two tests conducted at the middle and end of the semester respectively.

- The CIE marks awarded in the case of the Practical component shall be based on the continuous evaluation of the laboratory report. Each experiment report can be evaluated for 30 marks. Marks of all experiments' write-ups are added and scaled down to 30 marks.
- Two laboratory tests (duration 02 hours) at the end of the 8^{th} and 15^{th} week of the semester /after completion of 6 and all the experiments (whichever is early) shall be conducted for 50 marks and scaled down to 20 marks.

Scaled-down marks of write-up evaluations and tests added will be CIE marks for the laboratory for 50 marks.

Semester End Examination (SEE):

The Lab SEE comprises of a 3-hour lab examination in which students must perform assigned experiments out of all the experiments, to be evaluated for a total of 50 marks, including the write-up, experiment, and viva components.

The Final mark for the course is sum of the CIE and SEE Marks.: 50+50=100

Course delivery methods		Assessment methods	
1	Chalk and Talk	**1**	Weekly Evaluation

2	Practice session/Demonstrations in Labs	**2**	Lab CIE Test
3	Virtual Labs (if present)	**3**	Semester End Examination

CO-PO Mapping:

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	**3**	**2**	**-**	**2**	**3**	**-**	**-**	**-**	**-**	**-**	**-**
CO2	**3**	**3**	**-**	**2**	**2**	**-**	**-**	**-**	**-**	**-**	**-**
CO3	**2**	**3**	**-**	**3**	**2**	**-**	**-**	**-**	**-**	**-**	**-**
CO4	**2**	**2**	**-**	**2**	**3**	**-**	**-**	**-**	**-**	**-**	**2**
CO5	**1**	**1**	**-**	**1**	**1**	**-**	**-**	**-**	**3**	**-**	**2**

Level 3 – High, Level 2 – Moderate, Level 1 – Low

B.E, Semester I, (Common to all Engineering Courses)

Semester: I			
Innovation &Design Thinking Lab			
Course Code	MVJ26IDTKL18	**Scheme**	2026
Type of Course	SDCL	**Semester**	I
Teaching Hours/Week (L: T: P)	0:0:2	**CIE Marks**	50
Total Hours of Pedagogy (L: T:P:SL &TW)	0:0:28:2	**SEE Marks**	50
Credits:	1	**Total Marks**	100
Examination type (SEE)	Project	**Exam Hours**	3

Course Objectives:

The Course will give ability to:

- Empathize with community problems and define meaningful challenges
- Apply design thinking principles and multidisciplinary skills to develop user-centric solutions.
- Build and test basic prototypes using tools available in the Atal Idea/Tinkering Labor Makers Space.
- Pitch socially relevant ideas with scalable models.
- Collaborate effectively in diverse teams.

Sl. No.	Experiments List
1.	Week-1&2: Introduction to Social Entrepreneurship, Innovation and Design Thinking Group discussion on What are Innovation vs Invention. Why Design Thinking is important. Brief about 5 stages: Empathize – Define – Ideate – Prototype – Test.
2.	Week-3: Innovation warm-up activities, forming interdisciplinary teams
3.	Week-4&5: Field (any public places of student's interest Eg-Village, Government Office, Industry. R&D institute, NGO etc) visits, stakeholder interviews and interaction. Recording all interaction through handwritten in activity book prescribed by the University.
4.	Week-6: Documentation, categorization and Group discussion on interactions and problems/challenges.
5.	Week-7&8: Problem framing using "How Might We" approach, Identification of social problems and user insights through affinity Clustering and Problem Tree.
6.	Week-9&10: Presentation by teams on Defined Problems, Brainstorming interactions and Mind Mapping.
7.	Week-10: Idea Filtering-Shortlist of creative, eco-friendly and feasible ideas.
8.	Week-12&13: Building low-fidelity and working models using tools like Arduino, 3D printers, Digital fabrication, electronics kits and recycled materials
9.	Week-14: User testing, Feedback collection, Iteration - Observation Notes, Feedback Forms (Designing a business model for impact and scalability, if possible) Preparation of Draft of social venture plan)
10.	Week15&16: Final Demo and Social Pitch

Evaluation Method

Teaching-Learning Process (Innovative Delivery Methods)

1. Activity Based Learning
2. Group discussion, Presentations.
3. One faculty member shall be assigned to group of 60 students or one division.
4. Each group shall contain Min.10 and Max.15 students.
5. Nature of the group shall be multidisciplinary. (Group shall be formed by selecting students From all branches)

The assessment in each course is divided equally between Continuous Internal Evaluation (CIE) and the Semester End Examination (SEE), with each carrying 50% Weightage.

Continuous Internal Evaluation (CIE):

- Weekly Evaluation for 30 Marks: Weekly evaluation should be conducted for every experiment. Marks of each evaluation includes Lab Attendance (5 Marks) + Experiment conduction along with Record / Observation (15 Marks) + Viva (10 Marks) for each experiment. All weekly marks are added and scaled to 30 marks **(A)**.
- Two CIE tests for 20 Marks each should be conducted and averaged to 20 Marks **(B)**.

CIE Parameters (50 Marks)

Sl. No.	CIE Component/Week	Marks	Description
1	Orientation Activities & Communication Skills	5	Participation in Week 1–3 orientation, communication and teamwork skill-building exercises.
2	Empathy & Field Exploration Documentation	10	Quality and completeness of field visit reflections, stakeholder interviews, and activity book.
3	Problem Definition and Framing	10	Clarity of challenge statements, use of "How Might We", Affinity Mapping, Problem Trees.
4	Ideation & Mind Mapping	5	Participation in brainstorming, mind mapping, and idea filtering sessions.
5	Prototype Development &Iteration	10	Quality and creativity of prototype/model, user testing, feedback collection, iterations.
6	Final Presentation &Pitch	5	Project pitching, poster presentation, storytelling, and scalability model.
7	Teamwork, Journal, and Engagement	5	Peer and mentor evaluation of participation, Teamwork, journal updates.
8	Total CIE marks	50	Final CIE marks to be considered

Final CIE Marks of practical should be calculated as A+B for 50 marks.

Semester End Examination (SEE):

SEE shall be conducted by one Internal and one External Examiner

Sl. No.	Evaluation Parameter	Marks	Details
1	Prototype/Solution Demonstration	30	Working functionality, creativity, use of lab tools, and relevance to the problem.
2	Final Presentation/Social Pitch	20	Clarity, storytelling, problem-solution fit, communication, visual aids.
3	Business Modeler Sustainability Plan	10	Feasibility, cost-effectiveness, scalability, and alignment with SDGs.
4	Viva Voce	20	Individual understanding, contribution, tools used, learning outcomes.
5	Documentation Report/ Portfolio	20	Project report, reflection, team activity log, stakeholder input summaries.

The SEE of practical is evaluated for 50 marks, distributed as follows:

- Experiment Conduction with Results: 40 marks
- Viva Voce: 10 marks
- Total 50 marks

The Final mark for the course is the sum of CIE and SEE Marks.

CO-PO Mapping

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	1	1					3				
CO2	1	1					3				
CO3	1	1					2				
CO4	1	1					2				
CO5	1	1					2				

High-3: Medium-2: Low-1

B.E, Semester-I (CSE, AIML, CSE (Data Science), ISE, CSD)

Semester: I			
Samskrutika Kannada			
Course Code	MVJ26KSKK19	**Scheme**	2026
Type of Course	AEC	**Semester**	I
Teaching Hours/Week (L: T: P)	1:0:0	**CIE Marks**	50
Total Hours of Pedagogy (L: T:P:SL &TW)	14:0:0:16	**SEE Marks**	50
Credits	1	**Total Marks**	100
Examination type (SEE)	MCQ	**Exam Hours**	2 Hrs.

Course Objectives:

This course will give ability to:

- ವೃತ್ತಿಪರ ಪದವಿ ವಿದ್ಯಾರ್ಥಿಗಳಾಗಿರುವುದರಿಂದ ಕನ್ನಡ ಭಾಷೆ, ಸಾಹಿತ್ಯ ಮತ್ತು ಕನ್ನಡದ ಸಂಸ್ಕೃತಿಯ ಪರಿಚಯ ಮಾಡಿಕೊಡುವುದು.
- ಕನ್ನಡ ಸಾಹಿತ್ಯದ ಪ್ರಧಾನ ಭಾಗವಾದ ಆಧುನಿಕ ಪೂರ್ವ ಮತ್ತು ಆಧುನಿಕ ಕಾವ್ಯಗಳನ್ನು ಸಾಂಕೇತಿಕವಾಗಿ ಪರಿಚಯಿಸಿವುದು.
- ವಿದ್ಯಾರ್ಥಿಗಳಲ್ಲಿ ಸಾಹಿತ್ಯ ಮತ್ತು ಸಂಸ್ಕೃತಿಯ ಬಗ್ಗೆ ಅರಿವು ಹಾಗೂ ಆಸಕ್ತಿಯನ್ನು ಮೂಡಿಸುವುದು.
- ತಾಂತ್ರಿಕ ವ್ಯಕ್ತಿಗಳ ಪರಿಚಯವನ್ನು ಹಾಗೂ ಅವರುಗಳ ಸಾಧಿಸಿದ ವಿಷಯಗಳನ್ನು ಪರಿಚಯಿಸುವುದು.
- ಸಾಂಸ್ಕೃತಿಕ, ಜನಪದ ಹಾಗೂ ಪ್ರವಾಸ ಕಥನಗಳ ಪರಿಚಯ ಮಾಡಿಕೊಡುವುದು.

Syllabus

ಈ ಪಠ್ಯಕ್ರಮವು (ಬಿ.ಇ.)ಎಂಜಿನಿಯರಿಂಗ್ ವಿದ್ಯಾರ್ಥಿಗಳಿಗೆ ಕನ್ನಡ ಭಾಷೆ, ಸಾಹಿತ್ಯ ಮತ್ತು ಸಂಸ್ಕೃತಿಯ ಪರಿಚಯ ಮಾಡಿಕೊಡುತ್ತದೆ. ಈ ಪಠ್ಯಕ್ರಮದ ಮೂಲಕ ಆಧುನಿಕ ಹಾಗೂ ಪೂರ್ವಕಾಲದ ಕಾವ್ಯಗಳ ಅರಿವು ಮೂಡುತ್ತದೆ. ವಿದ್ಯಾರ್ಥಿಗಳಲ್ಲಿ ಸಾಹಿತ್ಯದ ಮೇಲೆ ಆಸಕ್ತಿ ಮತ್ತು ತಿಳುವಳಿಕೆ ಹೆಚ್ಚಾಗುತ್ತದೆ. ನಾಡಿನ ಮಹತ್ವಪೂರ್ಣ ವ್ಯಕ್ತಿಗಳು ಮತ್ತು ಅವರ ಸಾಧನೆಗಳ ಪರಿಚಯ ಸಿಗುತ್ತದೆ. ಹಾಗೆಯೇ ನಮ್ಮ ಸಂಸ್ಕೃತಿ, ಪರಂಪರೆ ಮತ್ತು ಜನಪದ ಕಥನಗಳ ಬಗ್ಗೆ ಅರಿವು ಮೂಡುತ್ತದೆ.

Course Plan

Module I

Sr. No	Topics to be covered	Hours required
1	ಕರ್ನಾಟಕ ಸಂಸ್ಕೃತಿ: ಹಂಪ ನಾಗರಾಜಯ್ಯ	3 Hrs
2	ಕರ್ನಾಟಕದ ಏಕೀಕರಣ: ಒಂದು ಅಪೂರ್ವ ಚರಿತ್ರೆ, ಜಿ. ವೆಂಕಟಸುಬ್ಬಯ್ಯ	
3	ಆಡಳಿತ ಭಾಷೆಯಾಗಿ ಕನ್ನಡ, ಡಾ.ಎಲ್. ತಿಮ್ಮೇಶ ಮತ್ತು ಪ್ರೊ. ವಿ. ಕೇಶವಮೂರ್ತಿ	

Module II

Sr. No	Topics to be covered	Hours required
1	ವಚನಗಳು: ಬಸವಣ್ಣ, ಅಕ್ಕಮಹಾದೇವಿ, ಅಲ್ಲಮಪ್ರಭು, ಆಯ್ದಕ್ಕಿಮಾರಯ್ಯ, ಜೇಡರದಾಸಿಮಯ್ಯ, ಆಯ್ದಕ್ಕಿಲಕ್ಕಮ್ಮ.	3 Hrs
2	ಕೀರ್ತನೆಗಳು: ಅದರಿಂದೇನು ಫಲ ಇದರಿಂದೇನು ಫಲ: ಪುರಂದರದಾಸರು ತಲ್ಲಣಿಸದಿರು ಕಂಡ್ಯ ತಾಳು ಮನವೇ: ಕನಕದಾಸರು	
3	ತತ್ವಪದಗಳು ಸಾವಿರ ಕೊಡಗಳ ಸುಟ್ಟು: ಶಿಶುನಾಳ ಶರೀಫ	

Module III

Sr. No	Topics to be covered	Hours required
1	ಡಿವಿಜಿರವರ ಮಂಕುತಿಮ್ಮನ ಕಗ್ಗದಿಂದ ಆಯ್ದ ಕೆಲವು ಭಾಗಗಳು	3 Hrs
2	ಕುರುಡು ಕಾಂಚಾಣ, ದ.ರಾ. ಬೇಂದ್ರೆ	
3	ಹೊಸ ಬಾಳಿನ ಗೀತೆ, ಕುವೆಂಪು	

Module IV

Sr. No	Topics to be covered	Hours required
1	ಡಾ. ಸರ್. ಎಂ. ವಿಶ್ವೇಶ್ವರಯ್ಯ: ವ್ಯಕ್ತಿ ಮತ್ತು ಐತಿಹ್ಯ, ಎ.ಎನ್. ಮೂರ್ತಿರಾವ್	3 Hrs
2	ಕರಕುಶಲ ಕಲೆಗಳು ಮತ್ತು ಪರಂಪರೆಯ ವಿಜ್ಞಾನ, ಕರೀಗೌಡ ಬೀಚನಹಳ್ಳಿ	

Module V

Sr. No	Topics to be covered	Hours required
1	ಯುಗಾದಿ, ವಸುಧೇಂದ್ರ	2 Hrs
2	ಮೆಗಾನೆ ಎಂಬ ಗಿರಿಜನ ಪರ್ವತ, ಹಿ.ಚಿ. ಬೋರಲಿಂಗಯ್ಯ	

Textbooks:

1. ಡಾ. ಎಲ್. ತಿಮ್ಮೇಶ, ಸಾಂಸ್ಕೃತಿಕ ಕನ್ನಡ, ಪ್ರಸಾರಾಂಗ,ವಿಶ್ವೇಶ್ವರಯ್ಯ ತಾಂತ್ರಿಕ ವಿಶ್ವವಿದ್ಯಾಲಯ, ಬೆಳಗಾವಿ.

Reference Books:

1. ಎಂ. ಎಚ್. ಕೃಷ್ಣಯ್ಯ, ಸಂಕ್ಷಿಪ್ತ ಕನ್ನಡ ಭಾಷೆಯ ಚರಿತ್ರೆ, ಸುವಿಧ್ಯಾ ಪ್ರಕಾಶನ, ಬೆಂಗಳೂರು, 1993.
2. ಎಂ ಚಿದಾನಂದಮೂರ್ತಿ, ಭಾಷಾ ವಿಜ್ಞಾನದ ಮೂಲ ತತ್ವಗಳು, ಡಿ.ವಿ.ಕೆ ಮೂರ್ತಿ, ಮೈಸೂರು, 2013.
3. ಡಿ. ಎನ್. ಶಂಕರ ಭಟ್, ಕನ್ನಡ ಬರಹವನ್ನು ಸರಿಪಡಿಸೋಣ, ಭಾಷಾ ಪ್ರಕಾಶನ ಮೈಸೂರು, 2005.
4. ಕರೀಗೌಡ ಬೀಚನಹಳ್ಳಿ, ಭಾಷಾಂತರದ ಸಾಂಸ್ಕೃತಿಕ ನೆಲೆಗಳು, ಸಂಪಾದಕ, ಕನ್ನಡ ವಿಶ್ವವಿದ್ಯಾಲಯ ಹಂಪಿ, 1999.
5. ರಂ. ಶ್ರೀ. ಮುಗಳಿ, ಕನ್ನಡ ಸಾಹಿತ್ಯ ಚರಿತ್ರೆ, ಗೀತಾ ಬುಕ್ ಹೌಸ್, ಮೈಸೂರು, 2014.
6. ಡಾ. ಜಿ. ಎಸ್. ಶಿವರುದ್ರಪ್ಪ, ಕನ್ನಡ ಸಾಹಿತ್ಯ ಸಮೀಕ್ಷೆ, ಸಪ್ನ ಬುಕ್ ಹೌಸ್, ಬೆಂಗಳೂರು, 2016.

Course Outcomes:

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

CO1: ಕನ್ನಡ ಭಾಷೆ, ಸಾಹಿತ್ಯ ಮತ್ತು ಕನ್ನಡದ ಸಂಸ್ಕೃತಿಯ ಕುರಿತು ಅರಿವು ಮೂಡಿರುತ್ತದೆ.

CO2: ಕನ್ನಡ ಸಾಹಿತ್ಯದ ಪ್ರಧಾನ ಭಾಗವಾದ ಆಧುನಿಕ ಪೂರ್ವ ಮತ್ತು ಆಧುನಿಕ ಕಾವ್ಯಗಳನ್ನು ಸಾಂಕೇತಿಕವಾಗಿ ಕಲಿತು ಹೆಚ್ಚಿನ ಓದಿಗೆ ಮತ್ತು ಜ್ಞಾನಕ್ಕೆ ಸ್ಫೂರ್ತಿ ಮೂಡುತ್ತದೆ.

CO3: ವಿದ್ಯಾರ್ಥಿಗಳಲ್ಲಿ ಸಾಹಿತ್ಯ ಮತ್ತು ಸಂಸ್ಕೃತಿಯ ಬಗ್ಗೆ ಅರಿವು ಹಾಗೂ ಆಸಕ್ತಿಯನ್ನು ಹೆಚ್ಚಿಸುತ್ತದೆ.

CO4: ತಾಂತ್ರಿಕ ವ್ಯಕ್ತಿಗಳ ಪರಿಚಯ ಹಾಗೂ ಅವರುಗಳು ಸಾಧಿಸಿದ ವಿಷಯಗಳನ್ನು ತಿಳಿದುಕೊಂಡು ನಾಡಿನ ಇನ್ನಿತರ ವ್ಯಕ್ತಿಗಳ ಬಗ್ಗೆ ತಿಳಿದುಕೊಳ್ಳಲು ಕೌತುಕತೆ ಹೆಚ್ಚಾಗುತ್ತದೆ.

CO5: ಸಾಂಸ್ಕೃತಿಕ ಜನಪದ ಹಾಗೂ ಪ್ರವಾಸ ಕಥನಗಳ ಪರಿಚಯ ಮೂಡುತ್ತದೆ.

Continuous Internal Evaluation (CIE) – 50 Marks

The CIE for the mandatory credit courses common across all disciplines comprises of two components as follows:

Internal Assessment Tests (30 Marks):

Two Internal Assessment tests will be conducted, each comprising 50 multiple choice questions for a total of 50 marks. The average of the two test scores will be scaled down to 30 marks (A).

Assignments (20 Marks):

Students are required to complete two assignments, each carrying 10 marks.

Final CIE marks will be calculated as A+B for 50 marks

Semester End Examination (SEE) – 50 Marks

A Semester End Examination is conducted for 50 marks comprising multiple-choice questions (MCQ) type for each one mark.

The Final mark for the course the Sum of SEE and CIE Marks.

CO-PO Mapping

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	-	-	-	-	-	2	-	3	-	2	-
CO2	-	1	-	-	-	-	-	2	-	2	-
CO3	-	-	-	-	-	2	-	3	1	2	-
CO4	-	-	-	-	-	2	-	2	1	2	-
CO5	-	-	-	-	-	2	1	3	-	2	-

High-3: Medium-2: Low-1

The Final mark for the course is sum of the CIE and SEE Marks.

Course delivery methods		Assessment methods	
1	Chalk and Talk	1	IA tests
2	Lecture/ Discussion	2	Open Book Assignments (OBA)
3	Question- Answer	3	Semester End Examination

B.E, Semester-I (CSE, AIML, CSE (Data Science), ISE, CSD)

Semester: I			
Balake Kannada			
Course Code	MVJ26KBKK19	**Scheme**	2026
Type of Course	AEC	**Semester**	I
Teaching Hours/Week (L: T: P)	1:0:0	**CIE Marks**	50
Total Hours of Pedagogy (L: T:P:SL &TW)	14:0:0:16	**SEE Marks**	50
Credits	1	**Total Marks**	100
Examination type (SEE)	MCQ	**Exam Hours**	2 Hrs.

Course Objectives:

This course will give ability to:

- To Create the 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.
- To know about Karnataka state and its language, literature and General information about this state

Module I	
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 Activities, Key to Transcription. 3. Personal Pronouns, Possessive Forms, Interrogative words. ವೈಯಕ್ತಿಕ, ಸಾಮ್ಯ ಸೂಚಕ / ಸಂಬಂಧಿತ ಸರ್ವನಾಮಗಳು ಮತ್ತು ಪ್ರಶ್ನಾರ್ಥಕ ಪದಗಳು.	**3 Hrs**
Module II	
1. Possessive forms of nouns, dubitive question and Relative nouns. ನಾಮಪದಗಳ ಸಂಬಂಧಾರ್ಥಕ ರೂಪಗಳು, ಸಂದೇಹಾಸ್ಪದ ಪ್ರಶ್ನೆಗಳು ಮತ್ತು ಸಂಬಂಧವಾಚಕ ನಾಮಪದಗಳು. 2. Qualitative, Quantitative and Colour Adjectives, Numerals. ಗುಣ, ಪರಿಮಾಣ ಮತ್ತು ವರ್ಣಬಣ್ಣ ವಿಶೇಷಣಗಳು, ಸಂಖ್ಯಾವಾಚಕಗಳು. 3. Predictive Forms, Locative Case ಕಾರಕ ರೂಪಗಳು ಮತ್ತು ವಿಭಕ್ತಿ ಪ್ರತ್ಯಯಗಳು; ಸಪ್ತಮಿ ವಿಭಕ್ತಿ ಪ್ರತ್ಯಯ (ಆ, ಅದು, ಅವು, ಅಲ್ಲಿ)	**3 Hrs**
Module III	
1. Dative Cases, and Numerals. ಚತುರ್ಥಿ ವಿಭಕ್ತಿ ಪ್ರತ್ಯಯದ ಬಳಕೆ ಮತ್ತು ಸಂಖ್ಯಾವಾಚಕಗಳು. 2. Ordinal numerals and Plural markers. ಸಂಖ್ಯಾಗುಣವಾಚಕಗಳು ಮತ್ತು ಬಹುವಚನ ನಾಮರೂಪಗಳು. 3. Defective/ Negative Verbs & Colour Adjectives. ನ್ಯೂನ/ ನಿಷೇಧಾರ್ಥಕ ಕ್ರಿಯಾಪದಗಳು.	**3 Hrs**

Module IV	
1. Permission, Commands, encouraging and Urging words (Imperative words and sentences). ಅಪ್ಪಣೆ / ಒಪ್ಪಿಗೆ, ನಿರ್ದೇಶನ, ಪ್ರೋತ್ಸಾಹ ಮತ್ತು ಒತ್ತಾಯ ಅರ್ಥರೂಪ ಪದಗಳು ವಾಕ್ಯಗಳು. 2. Accusative Cases and Potential Forms used in General Communication. ಸಾಮಾನ್ಯ ಸಂಭಾಷಣೆಗಳಲ್ಲಿ ದ್ವಿತೀಯ ವಿಭಕ್ತಿ ಪ್ರತ್ಯಯಗಳು ಮತ್ತು ಸಂಭವನೀಯ ಪ್ರಕಾರಗಳು. 3. Helping Verbs "iru and iralla", Corresponding Future and Negation Verbs. "ಇರು ಮತ್ತು ಇರಲ್ಲ" ಸಹಾಯಕ ಕ್ರಿಯಾಪದಗಳು, ಸಂಭಾವ್ಯಸೂಚಕ ಮತ್ತು ನಿಷೇಧಾರ್ಥಕ ಕ್ರಿಯಾಪದಗಳು. 4. Comparative, Relationship, identification and Negation Words. ಹೋಲಿಕೆ (ತರತಮ), ಸಂಬಂಧ ಸೂಚಕ, ವಸ್ತು ಸೂಚಕ ಪ್ರತ್ಯಯಗಳು ಮತ್ತು ನಿಷೇಧಾರ್ಥಕ ಪದಗಳ ಬಳಕೆ.	**3 Hrs**
Module V	
1. Different types of Tense, Time and Verbs. ಕಾಲ ಮತ್ತು ಸಮಯದ ಹಾಗೂ ಕ್ರಿಯಾಪದಗಳ ವಿವಿಧ ಪ್ರಕಾರಗಳು. 2. Formation of Past, Future and Present Tense Sentences with Verb Forms. ಕ್ರಿಯಾ ಪ್ರತ್ಯಯಗಳೊಂದಿಗೆ ಭೂತ ಭವಿಷ್ಯತ್ ಮತ್ತು ವರ್ತಮಾನ ಕಾಲಗಳ ವಾಕ್ಯರಚನೆ. 3. Kannada Vocabulary List: Kannada Words in Conversation ಸಂಭಾಷಣೆಯಲ್ಲಿ ದಿನೋಪಯೋಗಿ ಪದಗಳು.	**2 Hrs**

Textbooks:

1. Dr. L. Thimmesha, "Balake Kannada", Infinite Learning Solutions, Bangalore. 2021.

Reference Books:

1. Mysore University, "English Kannada dictionary (A to Z)", 2004.
2. "Maataaduva Kannada", Kannada Sahitya Parishat, Bangalore, 2016.
3. O. L. Nagabhushana Swamy, "Anuvada", Prasaranga, Kannada University, Hampi, 1993.
4. Ha. Ma. Nayak, "Kacheri Kaipidi", Kannada Adhyana Sansthe, Mysore University, 1974.
5. Dr. L. Thimmesha, Prof. V. Venkatesh Murthy, "Vyavaharika Kannada", Prasaranga, Visvesvaraya Technological University, Belagavi.

Course Outcomes:

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

CO1: To understand the necessity of learning of local language for a comfortable life.
CO2: To speak, read and write Kannada language as per requirement.
CO3: To communicate (converse) in Kannada language in their daily life with Kannada speakers.
CO4: To Listen and understand the Kannada language properly.
CO5: To speak in polite conservation.

Continuous Internal Evaluation (CIE) – 50 Marks

The CIE for the mandatory credit courses common across all disciplines comprises of two components as follows:

Internal Assessment Tests (30 Marks):

Two Internal Assessment tests will be conducted, each comprising 50 multiple choice questions for a total of 50 marks. The average of the two test scores will be scaled

down to 30 marks (A).

Assignments (20 Marks):

Students are required to complete two assignments, each carrying 10 marks.

Final CIE marks will be calculated as A+B for 50 marks

Semester End Examination (SEE) – 50 Marks

A Semester End Examination is conducted for 50 marks comprising multiple-choice questions (MCQ) type for each one mark.

The Final mark for the course the Sum of SEE and CIE Marks.

CO-PO Mapping

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	-	-	-	-	-	3	-	2	-	1	-
CO2	-	-	-	-	-	1	-	-	-	3	-
CO3	-	-	-	-	-	2	-	1	2	3	-
CO4	-	-	-	-	-	2	-	-		3	-
CO5	-	-	-	-	-	2	-	3	1	3	-

High-3: Medium-2: Low-1

B.E, Semester I (CSE, AIML, CSE (Data Science), ISE, CSD)

Semester: I			
Soft Skills			
Course Code	MVJ26SKSK110	**Scheme**	2026
Type of Course	AEC	**Semester**	I
Teaching Hours/Week (L: T: P)	1:0:0	**CIE Marks**	100
Total Hours of Pedagogy (L: T:P:SL &TW)	14:0:0:16	**SEE Marks**	---
Credits:	PP	**Total Marks**	100
Examination type (SEE)	--	**Exam Hours**	---

Course Objectives:

This course will give the ability to:

- Apply social skills for clear communication, persuasion, self-awareness, and active listening.
- Use emotional skills to build confidence, manage stress, and adapt to change.
- Set ambitious goals, practice empathy, and apply creativity for problem-solving.
- Demonstrate discipline, time management, and structured problem-solving.
- Work in teams, negotiate, resolve conflicts, and think critically.

Course Plan

Module I

Sr. No	Topics to be covered	Hours required
1	Communication in professional and social contexts, Active listening (paraphrasing, questioning techniques, and demonstrating attentiveness)	3 hrs
2	Persuasion Techniques to convince through logical, emotional, and ethical appeals	
3	Self-awareness in identifying strengths, weaknesses, opportunities, and challenges	
4	Classroom Assessment 1	

Module II

Sr. No	Topics to be covered	Hours required
1	Emotional Intelligence (recognising and managing emotions, empathy, relationship management, and conflict resolution), Adaptability and resilience in handling change, bouncing back from setbacks, and developing a growth mindset.	3 – Hr
2	Stress management (identifying stress triggers, relaxation techniques, work-life balance strategies, and mindfulness practices), Time management (prioritisation, setting SMART goals, avoiding procrastination, and effective scheduling),	
3	Classroom Assessment 2	

Module III

Sr. No	Topics to be covered	Hours required
1	Ambition and goal setting (defining personal and professional aspirations, creating SMART goals, and aligning actions with long-term vision), Sympathy and empathy (understanding emotional perspectives, differentiating between the two, and applying them in workplace and social interactions),	3- Hr

2	Creativity and innovation in generating original ideas, problem-solving, and applying creative thinking techniques.	
3	Classroom Assessment 3	
Module IV		
Sr. No	Topics to be covered	Hours required
1	Problem Solving (identifying root causes, analysing options, and implementing solutions using methods like 5 Whys and Fishbone Diagram), Discipline in building consistency, accountability, and professional habits, Time management for prioritizing tasks (Eisenhower Matrix), scheduling, and avoiding procrastination	3- Hrs
2	Classroom Assessment 4	
Module V		
Sr. No	Topics to be covered	Hours required
1	Collaboration and teamwork for working in diverse teams, fostering trust and achieving shared goals, Negotiation and Conflict Resolution (strategies to resolve differences and reach win-win outcomes), Critical thinking to analyse, evaluate, and synthesise information to make well-reasoned decisions	2 - Hr
2	Classroom Assessment 5	

Reference Books:

1. Pratap K. J. Mohapatra, Sanjib Moulick, "Principles of Scientific and Technical Writing", 1e, © 2025 | Published, December 23, 2024
2. Kumar, S. M., "Soft Skills", 1e, © 2024, Published June 8, Notion Publications, (2023)
3. Ashraf M. Rizvi, Priyadarshi Patnaik, "Effective Technical Communication", 3e, © 2024 | Published: September 12, 2024
4. Yadav, D. P., "A course in English pronunciation", Notion Publications, (2022).

Course Outcomes:

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

CO1: Apply social skills for clear communication, persuasion, self-awareness, and active listening.
CO2: Use emotional skills to build confidence, manage stress, and adapt to change.
CO3: Set goals, practice empathy, and apply creativity for problem-solving.
CO4: Demonstrate discipline, time management and structured problem-solving.
CO5: Work in teams, negotiate, resolve conflicts, and think critically.

Evaluation Method

Continuous Internal Evaluation (CIE) – 100 Marks

The CIE for the Soft Skills course is as follows:

1. Internal Assessment Tests (30 Marks):

Two Internal Assessment tests will be conducted, comprising knowledge-based and descriptive/reflective questions to evaluate students' writing skills for 30 marks each. The average of the two test scores will be scaled down to 30 marks.

2. Assignments (20 Marks):

Students are required to complete two assignments, each carrying 10 marks. These written assignments may include creative writing, problem-solving exercises, written reflections or job-oriented writing. The marks for the two assignments are added to get 20 marks.

3. Continuous Classroom Assessment (50 Marks)

For each of the five modules, students must participate in a group or individual activity, which may include role-play, debate, group discussion, peer-feedback, presentations, reflection journal, stress-management activity and other problem-solving and reflective exercises. Each continuous classroom assessment will carry 10 marks. These continuous assessments for five modules will be added to get a total of 50 marks.

Together, these three components are added to get the Final CIE marks of 100.

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

- ✓ Contents related activities, role-plays, problem-solving exercises
- ✓ For active participation of students, instruct the students to prepare PowerPoint presentations, written reflections and lecture notes
- ✓ Organizing group-wise discussions and peer-feedback

Quizzes and Discussions, Seminars, and Assignments

CO-PO Mapping

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	-	-	-	-	-	1	-	2	2	3	-
CO2	-	-	-	-	-	2	-	2	1	2	-
CO3	-	2	2	-	-	1	-	2	1	2	1
CO4	-	2	2	1	-	1	-	2	1	1	2
CO5	-	2	1	1	-	2	-	2	3	3	1

High-3: Medium-2: Low-1

Semester: I			
AI Skill Lab			
Course Code:	MVJ26SKL111	Scheme	**2026**
Type of Course	SDCL	Semester	**I**
Teaching Hours/Week (L: T:P)	0:0:2	CIE Marks	50
Total Hours of Pedagogy (L: T:P:SL&TW)	0:0:28:2	SEE Marks	50
Credits	1	Total Marks	**100**
Examination type (SEE)	Practical	Exam Hours	3

Course Objectives:

This course will give ability to:

- Introduce the concepts, capabilities, and applications of LLMs and Generative AI across multiple modalities.
- Develop the ability to design clear, structured, and effective prompts for obtaining task-specific AI-generated outputs.
- Develop practical skills in applying prompt engineering techniques to academic, professional, data analysis, and multimodal tasks.
- Develop the ability to decompose complex tasks and construct effective prompt-based workflows using AI tools.
- Develop critical evaluation skills for assessing the accuracy, reliability, bias, and limitations of AI-generated outputs.
- Promote ethical, responsible, and secure use of Generative AI with awareness of privacy, copyright, plagiarism, misinformation, and human oversight.

Sr. No	Experiments
1	Identify LLMs and Generative AI tools across text, image, audio, video, code, presentation, research, and document analysis, and understand their capabilities and applications.
2	Analyze the difference between clear and unclear prompts and examine how clarity, specificity, context, and instructions influence the quality and relevance of AI-generated responses. Analyse based on the given context.
3	Identify the key components of effective prompts—role, domain, context, and constraints and analyze their impact on AI-generated responses.
4	Apply prompting techniques such as zero-shot, one-shot, few-shot, and role-based prompting, and compare their effectiveness for different tasks.
5	Apply prompt engineering techniques to academic and professional tasks such as summarization, information extraction, translation, email drafting, and grammar checking of reports.
6.	Apply prompting techniques for debugging and optimization of code for a computational problem.
7.	Explore prompting techniques for multimodal AI systems using text, images, and documents as inputs for generation, analysis, summarization, and information extraction.
8.	Apply structured prompting techniques to analyze datasets, identify patterns and trends, extract insights and generate appropriate visualizations.
9.	Decompose complex tasks into smaller and manageable subtasks and develop a

	sequence of interconnected prompts to generate structured and comprehensive AI-assisted solutions.
10.	Evaluate AI-generated outputs based on accuracy, relevance, completeness, consistency, bias, and reliability, and verify generated information and references using trustworthy sources.
11.	Develop awareness of the ethical and responsible use of Generative AI, with emphasis on privacy, copyright, plagiarism, bias, misinformation, hallucinations, data security, and human oversight.
12.	Apply prompt engineering and Generative AI techniques to develop an AI-assisted solution for a selected academic or real-world problem.

Course Outcomes:

The student will be able to:

CO1: Identify and use LLMs and Generative AI tools across text, image, audio, video, and document-based applications.

CO2: Design and apply effective prompting techniques, including zero-shot, few-shot, role-based, and structured prompting, for diverse tasks.

CO3: Apply prompt engineering techniques for content creation, code debugging, multimodal processing, and data analysis.

CO4: Evaluate and verify AI-generated outputs for accuracy, relevance, reliability, bias, and consistency using trustworthy sources.

CO5: Develop AI-assisted solutions to academic or real-world problems while adhering to ethical, responsible, and secure Generative AI practices.

CO-PO Mapping:

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2
CO1	2	1	1		2								
CO2	2	1	1		2								
CO3	2	2	2	1	2								2
CO4	2	2	2	1	2								2
CO5	2	2	2	2	2			2					2

High-3: Medium-2: Low-1: