

Course Title	Mathematics-I for Electrical & Electronics Engineering Stream	Semester	I
Course Code	MVJ22MATE11	CIE	50
Total No. of Contact Hours	50 L : T : P :: 2 : 2 : 2	SEE	50
Course Type	Integrated	Total	100
Credits	4	Exam. Duration	3 Hours

Course objectives:

The goal of the course Mathematics-I for Electrical & Electronics Engineering stream is to

- Familiarize the importance of calculus associated with one variable and multivariable for Electrical and Electronics engineering.
- Analyze Electrical and Electronics engineering problems by applying Ordinary Differential Equations.
- Familiarize the important tools in Integral Calculus that are essential in Electrical and Electronics engineering.
- Develop the knowledge of Linear Algebra to solve the system of equations.

Module-1	L1, L2& L3	8 Hours
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Introduction to polar coordinates and curvature relating to EC & EE engineering.

Polar coordinates, Polar curves, angle between the radius vector and the tangent, and angle between two curves. Pedal equations. Curvature and Radius of curvature - Cartesian, Parametric, Polar and Pedal forms. Problems.

Self-study: Center and circle of curvature, evolutes and involutes.

Applications: Structural design and paths, Strength of materials, Elasticity.

Module-2	L1, L2& L3	8 Hours
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Introduction to series expansion and partial differentiation in the field of EC & EE engineering applications.

Taylor's and Maclaurin's series expansion for one variable (Statement only) – problems. Indeterminate forms - L'Hospital's rule, problems. Partial differentiation, total derivative - differentiation of composite functions. Jacobian and problems. Maxima and minima for a function of two variables - Problems.

Self-study: Euler's theorem and problems. Method of Lagrange's undetermined multipliers with single constraint.

Applications: Computation of stress and strain, Errors and approximations, Estimating the critical points and extreme values.

Module-3	L1,L2 &L3	8 Hours
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Introduction to first-order ordinary differential equations pertaining to the applications for EC & EE engineering.

Linear and Bernoulli's differential equations. Exact and reducible to exact differential equations - Integrating factors on $\frac{1}{N} \left(\frac{\partial M}{\partial y} - \frac{\partial N}{\partial x} \right)$ and $\frac{1}{M} \left(\frac{\partial N}{\partial x} - \frac{\partial M}{\partial y} \right)$. Orthogonal trajectories and Newton's law of cooling. Nonlinear differential equations: Introduction to general and singular solutions, Solvable for p

only, Clairaut's equations, reducible to Clairaut's equations - Problems.

Self-Study: Applications of ODEs in Civil Engineering problems like bending of the beam, whirling of shaft, solution of non-linear ODE by the method of solvable for x and y.

Applications: Rate of Growth or Decay, Conduction of heat.

Module-4

L1,L2 & L3

8 Hours

Introduction to Integral Calculus in EC & EE Engineering applications.

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

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

Self-Study: Volume by triple integration, Center of gravity.

Applications: Antenna and wave propagation, Calculation of optimum power in electrical circuits, field theory.

Module-5

L1,L2 & L3

8 Hours

Introduction of linear algebra related to EC & EE applications.

Elementary row transformation of a matrix, Rank of a matrix. Consistency and solution of a system of linear equations - Gauss-elimination method, Gauss-Jordan method and approximate solution by Gauss-Seidel method. Eigenvalues and Eigenvectors, Rayleigh's power method to find the dominant Eigenvalue and Eigenvector.

Self-Study: Solution of a system of linear equations by Gauss-Jacobi iterative method. Inverse of a square matrix by Cayley- Hamilton theorem.

Applications: Structural Analysis, Balancing equations.

List of Laboratory experiments

1.	2D plots for Cartesian and polar curves.
2.	Finding angle between polar curves, curvature and radius of curvature of a given curve.
3.	Finding partial derivatives and Jacobian.
4.	Applications to Maxima and Minima of two variables.
5.	Solution of first-order ordinary differential equation and plotting the solution curves.
6.	Program to compute area, volume and centre of gravity.
7.	Evaluation of improper integrals.
8.	Numerical solution of system of linear equations, test for consistency and graphical Representation.
9.	Solution of system of linear equations using Gauss-Seidel iteration.
10.	Compute eigenvalues and eigenvectors and find the largest and smallest eigenvalue by the Rayleigh power method.

Course outcomes:

CO1	apply the knowledge of calculus to solve problems related to polar curves and learn the notion of partial differentiation to compute rate of change of multivariate functions.
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CO2	analyze the solution of linear and nonlinear ordinary differential equations.
CO3	apply the concept of change of order of integration and variables to evaluate multiple integrals and their usage in computing area and volume.
CO4	make use of matrix theory for solving the system of linear equations and compute eigenvalues and eigenvectors.
CO5	familiarize with modern mathematical tools namely MATHEMATICA/ MATLAB/ PYTHON/SCILAB.

Text Books:

1	B.S. Grewal, "Higher Engineering Mathematics" Khanna Publishers, 43 rd Edition, 2013.
2	Erwin Kreyszig, "Advanced Engineering Mathematics", Wiley-India publishers, 10 th edition, 2014.
3	N.P.Bali and Manish Goyal: A Text Book of Engineering Mathematics, Laxmi Publishers, 7 th Ed., 2010.
4	B.V.Ramana: "Higher Engineering Mathematics" Tata McGraw-Hill, 2006.
5	H. K. Dass and Er. RajnishVerma: "Higher Engineering Mathematics", S. Chand publishing, 1 st edition, 2011.

Assessment:

Assessment Details (both CIE and SEE):

The weightage of Continuous Internal Evaluation (CIE) is 50% and for Semester End Exam (SEE) is 50%. The minimum passing mark for the CIE is 40% of the maximum marks (20 marks out of 50). The minimum passing mark for the Theory SEE is 35% of the maximum marks (35 marks out of 100). The minimum passing mark for the Lab SEE is 35% of the maximum marks (18 marks out of 50).

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

Continuous Internal Evaluation(CIE):

The CIE marks for the theory component of the IC (Integrated Course) shall be 50 marks, for the theory quiz's shall be 10 marks and for the laboratory component 50 Marks.

CIE for the theory component of the IC (Integrated Course):

Three Tests each of 50 Marks and Three Quiz's each of 10 marks; after the completion of the syllabus of 35-40%, 65-70%, and 100% respectively. □ Two Assignments (seminars/one field survey and report presentation/one-course project) and three quizzes totaling 50 marks. Total Marks

scored (test + assignments + quiz's) out of 100 shall be scaled down to 50 marks.

The minimum marks to be secured in CIE to appear for SEE shall be 20 (40% of maximum marks) in the theory component.

CIE for the practical component of the IC (Integrated Course): □

The following components shall be considered for CIE of the Practical component of the IC(Integrated Course)

1. Weekly Evaluation (write-up evaluations):

On completion of every experiment/program in the laboratory, the students shall be evaluated and marks shall be awarded on the same day. Each program shall be evaluated for 10 marks and it is distributed as the 6 marks are for conducting the experiment and 4 marks for preparation of the laboratory record. Finally the total marks will be averaged to 10 marks and then scaled to 30 marks.

2. Innovative Experiment:

On completion of every Innovative experiment/program in the laboratory, the students shall be evaluated and 10 marks shall be awarded.

3. CIE of Practical component:

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 20 marks and viva-voce for 5 marks.

Marks of all experiments' write-ups and Innovative experiment are added and scaled down to 50 marks.

The laboratory test (duration 03 hours) at the end of the 15th week of the semester/after completion of all the experiments (whichever is early) shall be conducted for 50 marks and scaled down to 10 marks.

Scaled-down marks of write-up evaluations, Innovative experiment and tests added will be CIE marks for the laboratory component of IC/IPCC for 50 marks.

The minimum marks to be secured in CIE to appear for SEE shall be 20 (40% of maximum marks)in the practical CIE component.

Theory Semester End Examination(SEE):

Theory SEE will be conducted by Institution as per the scheduled timetable, with common question papers for the subject (duration 03 hours). The question paper shall be set for 100 marks. The medium of the question paper shall be English. The duration of SEE is 03 hours. The question paper will contain two parts, namely PART-A for 20 Marks and PART-B for 80 Marks. The question paper will have 05 questions in PART-A and 10 questions in PART-B. Two questions per module. Each of the two questions under a module (with a maximum of 3 sub-questions), should have a mix of topics under that module. Each question is set for 16 marks in PART-B. The students have to answer all the questions in PART-A. The students have to answer 5 full questions, selecting one full question from each module in PART-B. The student has to answer for 100 marks and marks scored

out of 100 shall be proportionally reduced to 50 marks.

Practical Semester End Examination(SEE):

Practical SEE will be conducted by Institution as per the scheduled timetable, with common question papers for the subject (duration 03 hours). The question paper shall be set for 50 marks. The medium of the question paper shall be English. The duration of SEE is 03 hours.

in Practical component of SEE, The maximum of 02 questions is to be set, the total marks of all questions should not be more than 50 marks.

The students have to answer 02 full questions for 50 Marks. Each of the two questions (with a maximum of 2 sub-questions), should have a mix of topics under the syllabus.

CO-PO Mapping												
CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	0	1	0	0	0	0	0	0	0	0
CO2	3	3	0	2	0	0	0	0	0	0	1	0
CO3	3	3	1	2	0	0	0	0	0	0	1	1
CO4	3	2	1	2	0	0	0	0	0	0	1	1
CO5	3	3	1	3	0	0	0	0	0	0	1	1

High-3, Medium-2, Low-1

Course Title	Chemistry for Electrical and Electronics Engineering Stream	Semester	I/II
Course Code	MVJ22CHEE12/22	CIE	50
Teaching Hours/Week(L: T:P:S)	2:2:2:0	SEE	50
Course Type(Theory/Practical/Integrated)	Integrated	Total	100
Credits	4	Exam.Duration	3hrs
Total Hours of Pedagogy	40 hours Theory+10to 12Lab slots		

- **Course objective is to:**
- **To enable students to acquire knowledge on principles of chemistry for engineering applications.**
- **To develop an intuitive understanding of chemistry by emphasizing the related branches of engineering.**
- **To provide students with a solid foundation in analytical reasoning required to solve societal problems.**

Module-1

L1,L2

8Hrs.

Chemistry of Electronic Materials

Conductors and Insulators: Introduction , principle with examples.

Semiconductors: Introduction, production of electronic grade silicon-Czochralski process(CZ) and FloatZone(FZ) methods.

Polymers: Introduction, Molecular weight Number average,Weight average and numerical problems. Conducting polymers– synthesis and conducting mechanism of polyacetylene.Preparation, properties and commercial applications of grapheneoxide.

PCB: Electroless plating – Introduction, Electroless plating of copper in the manufacture of double-sided PCB.

Self-learning:Technological importance of metal finishing and distinction between electroplating and electroless plating.

Module-2

L1,L2

8 Hrs.

Energy Conversion and Storage

Batteries: Introduction, classification of batteries. Components, construction, working and applications of modern batteries; Na-ion battery, solid state battery (Li-polymer battery)andflowbattery(Vanadium redox flow battery).

Fuel Cells: Introduction, construction, working and applications of methanol–oxygen and polymer electrolyte membrane (PEM) fuelcell. **Solar Energy:** Introduction, importance of solarPVcell,construction and working of solar PVcell,a dvantages and disadvantages.

Self-learning:Electrodes for electrostatic double layer capacitors,pseudocapacitors,and Hybrid capacitor.

	L1,L2,L3	8 Hrs.
Module-3		

Corrosion Science and E-waste Management

Corrosion Chemistry: Introduction, electrochemical theory of corrosion, types of corrosion- differential metal and differential aeration. Corrosion control- galvanization, anodization and sacrificial anode method. Corrosion Penetration Rate (CPR) – Introduction and numerical problem.

E-waste Management: Introduction, sources, types, effects of e-waste on environment and human health, methods of disposal, advantages of recycling. Extraction of copper and gold from e-waste.

Self-learning: Recycling of PCB and battery components

	L1,L2,L3	8Hrs.
Module-4		

Nanomaterials and Display Systems

Nanomaterials: Introduction, size dependent properties of nanomaterials (Surface area, Catalytic, Conducting), preparation of nanomaterials by sol-gel and co-precipitation method with example. Introduction, properties and applications- Nanofibers, Nanophotonics, Nanosensors.

Display Systems: Liquid crystals (LC's)- Introduction, classification, properties and application in Liquid Crystal Displays (LCD's). Properties and application of Organic Light Emitting Diodes (OLED's) and Quantum Light emitting diodes (QLED's).

Perovskite Materials: Introduction, properties and applications in optoelectronic devices.

Self-learning: Properties & electrochemical applications of carbon nanotubes and graphene

	L1,L2,L3	8Hrs.
Module-5		

Sensors in Analytical Techniques

Electrode System: Introduction, types of electrodes. Ion selective electrode – definition, construction, working and applications of glass electrode. Determination of pH using glass electrode. Reference electrode- Introduction, calomel electrode – construction, working and applications of calomel electrode. Concentration cell – Definition, construction and Numerical problems.

Sensors: Introduction, working principle and applications of Conductometric sensors, Electrochemical sensors, Thermometric sensors, and Optical sensors.

Analytical Techniques: Introduction, principle and instrumentation of Colorimetric sensors; its application in the estimation of copper, principle and instrumentation of Potentiometric sensors; principle and instrumentation of its application in the estimation of iron, Conductometric sensors; its application in the estimation of weak acid.

Self-learning: IR and UV-Visible spectroscopy.

Reference Books:	
1.	Wiley Engineering Chemistry, Wiley India Pvt. Ltd. New Delhi, 2013-2 nd Edition.
2.	A Text Book of Engg. Chemistry, Shashi Chawla, Dhanpat Rai & Co. (P) Ltd.

3.	Essentials of Physical Chemistry , Bahl & Tuli,S.Chand Publishing
4.	A textBook of Engineering Chemistry, R.V.Gadagand NityanandaShetty , I.K.International Publishing house. 2 nd Edition,2016.
5.	Corrosion Engineering, M.G.Fontana, N.D.Greene, McGraw Hill Publications, NewYork,3 rd Edition, 199 6.

PRACTICAL MODULE

A–Demonstration (anytwo) offline/virtual:

- A1.Synthesis of polyurethane .
- A2.Determination of strength of acid in Pb-acid battery
- A3.Synthesis of iron oxide nanoparticles
- A4.Electroplating of copper on metallic objects

B–Exercise(compulsorily any 4 to be conducted):

- B1.Conductometric estimation of acid mixture
- B2.Potentiometric estimation of FAS using K₂Cr₂O₇
- B3.Determination of pK_a of vinegar using pH sensor(Glasselectrode)
- B4.Determination of rate of corrosion of mild steel by weight loss method
- B5.Estimation of total hardness of water by EDTA method

C–Structured Enquiry (compulsorily any 4 to be conducted):

- C1. Estimation of Copper present in electroplating effluent by optical sensor (colorimetry) .
- C2.Determination of Viscosity coefficient of lubricant(Ostwald’s viscometer) .
- C3. Estimation of iron in TMT bar by diphenyl amine/external indicator method .
- C4.Estimation of Sodium present in soil/effluent sample using flamephotometry .
- C5.Determination of Chemical Oxygen Demand (COD) of industrial waste water sample .

D–Open Ended Experiments(any two):

- D1. Estimation of metal in e-waste by optical sensors .
- D2.Electroless plating of Nickle on Copper
- D3.Determination of glucose by electrochemical sensors .
- D4.Synthesis of polyaniline and its conductivity measurement .

Course outcomes:

CO1	Identify the terms processes involved in scientific and engineering and applications
CO2	Explain the phenomena of chemistry to describe the methods of engineering processes
CO3	Solve the problems in chemistry that are pertinent in engineering applications
CO4	Apply the basic concepts of chemistry to explain the chemical properties and processes
CO5	Analyze properties and multi processes associated with chemical substances interdisciplinary situations

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- CIE for the theory component of the IC (Integrated Course): Three Tests each of 50 Marks and Three Quiz's each of 10 marks; after the completion of the syllabus of 35-40%, 65-70%, and 100% respectively. Two Assignments (seminars/one field survey and report presentation/one-course project) and three quizzes totaling 50 marks. Total Marks .
- scored (test + assignments + quiz's) out of 100 shall be scaled down to 50 marks. The minimum marks to be secured in CIE to appear for SEE shall be 20 (40% of maximum marks) in the theory component.

CIE for the practical component of the IC (Integrated Course):

- The following components shall be considered for CIE of the Practical component of the IC(Integrated Course)
- Weekly Evaluation (write-up evaluations): On completion of every experiment/program in the laboratory, the students shall be evaluated and marks shall be awarded on the same day.
- Each program shall be evaluated for 10 marks and it is distributed as the 6 marks are for conducting the experiment and 4 marks for preparation of the laboratory record.
- Finally the total marks will be averaged to 10 marks and then scaled to 30 marks.
- Innovative Experiment: On completion of every Innovative experiment/program in the laboratory, the students shall be evaluated and 10 marks shall be awarded.

CIE of Practical component:

- 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 20 marks and vivavoce for 5 marks. Marks of all experiments' write-ups and Innovative experiment are added and scaled down to 50 marks .
- The laboratory test (duration 03 hours) at the end of the 15th week of the semester/after completion of all the experiments (whichever is early) shall be conducted for 50 marks and scaled down to 10 marks. Scaled-down marks of write-up evaluations, Innovative experiment and tests added will be CIE marks for the laboratory component of IC/IPCC for 50 marks

- The laboratory test (duration 03 hours) at the end of the 15th week of the semester/after completion of all the experiments (whichever is early) shall be conducted for 50 marks and scaled down to 10 marks.
- Scaled-down marks of write-up evaluations, Innovative experiment and tests added will be CIE marks for the laboratory component of IC/IPCC for 50 marks.
- The minimum marks to be secured in CIE to appear for SEE shall be 20 (40% of maximum marks) in the practical CIE component.
- **Theory Semester End Examination(SEE):** Theory SEE will be conducted by Institution as per the scheduled timetable, with common question papers for the subject (duration 03 hours). The question paper shall be set for 100 marks.
- The medium of the question paper shall be English. The duration of SEE is 03 hours. The question paper will contain two parts, namely PART-A for 20 Marks and PART-B for 80 Marks.
- The question paper will have 05 questions in PART-A and 10 questions in PART-B. Two questions per module.
- Each of the two questions under a module (with a maximum of 3 sub-questions), should have a mix of topics under that module. Each question is set for 16 marks in PART-B. The students have to answer all the questions in PART-A.
- The students have to answer 5 full questions, selecting one full question from each module in PART-B. The student has to answer for 100 marks and marks scored . out of 100 shall be proportionally reduced to 50 marks.

Practical Semester End Examination(SEE):

- Practical SEE will be conducted by Institution as per the scheduled timetable, with common question papers for the subject (duration 03 hours).
- The question paper shall be set for 50 marks.
- The medium of the question paper shall be English.
- The duration of SEE is 03 hours. in Practical component of SEE, The maximum of 02 questions is to be set, the total marks of all questions should not be more than 50 marks.
- The students have to answer 02 full questions for 50 Marks. Each of the two questions (with a maximum of 2 sub-questions), should have a mix of topics under the syllabus

Cos and POs Mapping												
PO												
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	1	1				1					
CO2	3	1	1				1					
CO3	3	1	1				1					
CO4	3	1	1				1					
CO5	3	1	1				1					

Course Title:	Computer Aided Engineering Drawing (Common to All)		
Course Code	MVJ22CEDK13/23	CIE Marks	50
Teaching Hour/Week (L:T:P:S)	2:0:2:0	SEE Marks	50
Total Hours of Teaching - Learning	40	Total Marks	100
Credits	03	Exam Hours	03
Course Learning Objectives: CLO1: To understand the basic principles and conventions of engineering drawing CLO2: To use drawing as a communication mode CLO3: To generate pictorial views using CAD software CLO4: To understand the development of surfaces CLO5: To visualize engineering components			
Teaching-Learning (General Instructions): <ul style="list-style-type: none"> • Students should be made aware of powerful engineering communication tool –Drawing. • Simple Case studies can be suitably selected by the teacher for hands on practice to induce the feel of fruitfulness of learning. • Appropriate Models, Power Point presentation, Charts, Videos, shall be used to enhance visualization before hands on practice. • For application problems use very generally available actual objects. (Example: For rectangular prism / object; matchbox, carton boxes, book, etc can be used. Similarly for other shapes) • Use any CAD software for generating orthographic and pictorial views. • Make use of sketch book with graph sheets for manual / preparatory sketching 			
Module-1		L1,L2,L3	6 h
Introduction: for CIE only 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, 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. Orthographic Projections of Points, Lines and Planes: Introduction to Orthographic projections: Orthographic projections of points in 1 st and 3 rd quadrants. Orthographic projections of lines (Placed in First quadrant only). Orthographic projections of planes viz triangle, square, rectangle, pentagon, hexagon, and circular laminae (Placed in First quadrant only using change of position method). <i>Application on projections of Lines & Planes (For CIE only)</i>			
Module-2		L1,L2,L3	5 h
Orthographic Projection of Solids: Orthographic projection of right regular solids (Solids Resting on HP only): Prisms & Pyramids (triangle, square, rectangle, pentagon, hexagon), Cylinders, Cones, Cubes & Tetrahedron. <i>Projections of Frustum of cone and pyramids (For practice only, not for CIE and SEE).</i>			

Module-3	L1,L2,L3	5 h
<p>Isometric Projections: Isometric scale, Isometric projection of hexahedron (cube), right regular prisms, pyramids, cylinders, cones and spheres. Isometric projection of combination of two simple solids.</p> <p>Conversion of simple isometric drawings into orthographic views. Problems on applications of Isometric projections of simple objects / engineering components.</p> <p><i>Introduction to drawing views using 3D environment (For CIE only).</i></p>		
Module-4	L1,L2,L3	5 h
<p>Development of Lateral Surfaces of Solids: Development of lateral surfaces of right regular prisms, cylinders, pyramids and cones resting with base on HP only. Development of lateral surfaces of their frustums and truncations. Problems on applications of development of lateral surfaces like funnels and trays.</p> <p><i>Problems on applications of development of lateral surfaces of transition pieces connecting circular duct and rectangular duct (For CIE Only)</i></p>		
Module-5	L2,L3,L4	5 h
<p>Multidisciplinary Applications & Practice (For CIE Only): Free hand Sketching; True free hand, Guided Free hand, Roads, Buildings, Utensils, Hand tools & Furniture's etc Drawing Simple Mechanisms; Bicycles, Tricycles, Gear trains, Ratchets, two-wheeler cart & Four-wheeler carts to dimensions etc Electric Wiring and lighting diagrams; Like, Automatic fire alarm, Call bell system, UPS system, Basic power distribution system using suitable software Basic Building Drawing; Like, Architectural floor plan, basic foundation drawing, steel structures- Frames, bridges, trusses using Auto CAD or suitable software, Electronics Engineering Drawings- Like, Simple Electronics Circuit Drawings, practice on layers concept. Graphs & Charts: Like, Column chart, Pie chart, Line charts, Gantt charts, etc. using Microsoft Excel or any suitable software.</p>		
<p>Course Outcomes At the end of the course the student will be able to:</p> <ul style="list-style-type: none"> CO 1. Draw and communicate the objects with definite shape and dimensions CO 2. Recognize and Draw the shape and size of objects through different views CO 3. Develop the lateral surfaces of the object CO 4. Create a Drawing views using CAD software. CO 5. Identify the interdisciplinary engineering components or systems through its graphical representation. 		

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 of Continuous evaluation of Drawing work of students as and when the Modules are covered based on below detailed weightage.

Module	Max. Marks Weightage	Evaluation Weightage in marks	
		Computer display and print out (a)	Sketching (b)
Module 1	15	10	05
Module 2	20	15	05
Module 3	20	20	00
Module 4	20	20	00
Module 5	25	15	10
Total	100	80	20
Consideration of Class work	Total of [(a) + (b)] = 100 Scaled down to 30 Marks		

- At least one **Test** covering all the modules is to be conducted for 100 marks and evaluation to be based SEE pattern, and the same is to be scaled down to **20 Marks**.
- The final CIE = Class work marks + Test marks

Semester End Examination (SEE)

- SEE shall be conducted and evaluated for maximum marks 100. Marks obtained shall be accounted for SEE final marks, reducing it by 50%
- Question paper shall be set jointly by both Internal and External Examiner and made available for each batch as per schedule. ***Questions are to be set preferably from TextBooks.***
- **Related to Module-1:** One full question can be set either from “*points & lines*” or “*planes*”.
- Evaluation shall be carried jointly by both the examiners.
- Scheme of Evaluation: *To be defined by the examiners jointly and the same shall be submitted to the university along with question paper.*
- One full question shall be set from each of the Module from Modules 1,2,3 and 4 as per the below table weightage details. **However, the student may be awarded full marks, if he/she completes solution on computer display without sketch.**

Module	Max. Marks Weightage	Evaluation Weightage in marks	
		Computer display and print out (a)	Preparatory sketching (b)
Module 1	20	15	05
Module 2	30	25	05
Module 3	25	20	05
Module 4	25	20	05
Total	100	80	20
Consideration of SEE Marks		Total of (a) + (b) ÷ 2 = Final SEE marks	

Suggested Learning Resources:

Text Books

- *S.N. Lal, & T Madhusudhan*., Engineering Visulisation, 1st Edition, Cengage,Publication
- *Parthasarathy N. S., Vela Murali*, Engineering Drawing, Oxford University Press,2015.

Reference Books

- *Bhattacharya S. K.*, Electrical Engineering Drawing, New Age International publishers, second edition 1998, reprint2005.
- *Chris Schroder*, Printed Circuit Board Design using AutoCAD, Newnes,1997.
- *K S Sai Ram* Design of steel structures, , Third Edition byPearson
- *Nainan p kurian* Design of foundation systems, Narosapublications
- *A S Pabla*, Electrical power distribution, 6th edition, Tata Mcgrawhill
- *Bhatt, N.D.*, *Engineering Drawing: Plane and Solid Geometry*, 53rd edition, Charotar Publishing House Pvt. Limited, 2019.
- *K. R. Gopalakrishna, & Sudhir Gopalakrishna*: Textbook Of Computer Aided Engineering Drawing, 39th Edition, Subash Stores, Bangalore,2017

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

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

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

INTRODUCTION TO C PROGRAMMING			
Course Code	MVJ22ESCK14E	CIE Marks	50
Teaching Hours/Week(L:P: SDA)	2:0:2:0	SEE Marks	50
Total Hours of Pedagogy	40 Hours	Total Marks	100
Credits	03	Exam Hours	03
<ul style="list-style-type: none"> ● Course Learning objectives: 1. Elucidate the basic architecture and functionalities of a Computer 2. Apply programming constructs of C language to solve the real-world problems 3. Explore user-defined data structures like arrays, structures and pointers in implementing solutions to problems 4. Design and Develop Solutions to problems using modular programming constructs such as functions and procedures 			
MODULE-1			
Introduction to C: Introduction to computers, input and output devices, designing efficient programs. Introduction to C, Structure of C program, Files used in a C program, Compilers, Compiling and executing C programs, variables, constants, Input/output statements in C, Operators in C, Type conversion and typecasting. <p style="text-align: right;">RBT Level: L1, L2, L3, L4</p>			
Teaching-Learning Process	Chalk and talk method, Power Point Presentation, You tube videos, Brain storming, Activity based method, Seminar		
MODULE-2			
Decision control and Looping statements: Introduction to decision control, Conditional branching statements, iterative statements, nested loops, break and continue statements, goto statement. <p style="text-align: right;">RBT Level: L1,L2,L3,L4</p>			
Teaching-Learning Process	Chalk and talk method, Power Point Presentation, You tube videos, Brain storming, Activity based method, Seminar		
MODULE-3			
Functions: Introduction using functions, Function definition, function declaration, function call, return statement, passing parameters to functions, scope of variables, storage classes, recursive functions. Arrays: Declaration of arrays, accessing the elements of an array, storing values in arrays, Operations on arrays, Passing arrays to functions, Two dimensional arrays, operations on two-dimensional arrays, two-dimensional arrays to functions, multidimensional arrays, Applications of arrays, case study with sorting techniques. <p style="text-align: right;">RBT Level: L1, L2, L3, L4</p>			
Teaching-Learning Process	Chalk and talk method, Power Point Presentation, You tube videos, Brain storming, Activity based method, Seminar		
MODULE4			

<p>Introduction to strings: Reading strings, writing strings, summary of functions used to read and write characters. Suppressing input using a Scanset. Strings: String taxonomy, operations on strings, Miscellaneous string and character functions, arrays of strings.</p> <p style="text-align: right;">RBT Level: L1, L2, L3, L4</p>	
Teaching-Learning Process	Chalk and talk method, Power Point Presentation, You tube videos, Brain storming, Activity based method, Seminar
MODULE5	
<p>Pointers: Understanding the Computer’s Memory, Introduction to Pointers, Declaring Pointer Variables Structures: Introduction to structures, Unions.</p> <p style="text-align: right;">RBT Level: L1, L2, , L3, L4</p>	
Teaching-Learning Process	Chalk and talk method, Power Point Presentation, You tube videos, Brain storming, Activity based method, Seminar
<p>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 50% of the maximum marks. Minimum passing marks in SEE is 40% of the maximum marks of SEE. 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 50% (50 marks out of 100) in the sum total of the CIE (Continuous Internal Evaluation) and SEE (Semester End Examination) taken together.</p> <p>Continuous Internal Evaluation: 1. Three Unit Tests each of 50 Marks. Two assignments each of 50 Marks The sum of three tests, two assignments/skill Development Activities, will be scaled down to 50 marks.</p> <p>CIE methods /question paper is designed to attain the different levels of Bloom’s taxonomy as per the outcome defined for the course.</p> <p>Semester End Examination:</p> <ol style="list-style-type: none"> The SEE question paper will be set for 100 marks and the marks scored will be proportionately reduced to 50. The question paper will have ten full questions carrying equal marks. Each full question is for 50 marks. There will be two full questions (with a maximum of four sub-questions) from each module. Each full question will have a sub-question covering all the topics under a module. <p>The students will have to answer five full questions, selecting one full question from each module</p> <p>Textbooks 1. Computer fundamentals and programming in c, “Reema Thareja”, Oxford University, Second edition, 2017.</p> <p>Reference Books: 1. E. Balaguruswamy, Programming in ANSI C, 7th Edition, Tata McGraw-Hill.</p>	

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

Course Learning Outcomes: After the completion of the course, students will be able to:

Sl. No.	Description	Blooms Level
CO1	Elucidate the basic architecture and functionalities of a computer and also recognize the hardware parts.	Understand
CO2	Apply programming constructs of C language to solve the real world problem	Analyze
CO3	Explore user-defined data structures like arrays in implementing solutions to problems like searching and sorting	Analyze
CO4	Explore user-defined data structures like structures, unions and pointers in implementing solutions	Analyze
CO5	Design and Develop Solutions to problems using modular programming constructs using functions	Design and analyze

Program Outcomes for this Course:

Sl. No.	Description	POs
1	An ability to independently carry out research/investigation and development work to solve practical problems	PO1
2	An ability to write and present a substantial technical report/document	PO2
3	Students should be able to demonstrate a degree of mastery over the area as per the specialization of the program. The mastery should be at a level higher than the requirements in the appropriate bachelor program	PO3
4	An ability to create, select, apply appropriate techniques, resources and modern tools to solve complex engineering activities with an understanding of their limitations.	PO4
5	An ability to apply Professional ethics, responsibilities and norms of the engineering.	PO5
6	An ability to recognize the need to engage in independent and life-long learning in various Communication domain.	PO6

Mapping of COS and POs

	PO1	PO2	PO3	PO4	PO5	PO6
CO1	1	1	1	2	1	1
CO2	1	1	1	2	1	1
CO3	2	1	2	2	1	1
CO4	1	1	1	2	1	1
CO5	1	1	1	2	1	1

Course Title:	Introduction to Internet of Things (IOT)		
Course Code:	MVJ22ETCK15E/H/25E/H	CIE Marks	50
Course Type (Theory/Practical /Integrated)	Theory	SEE Marks	50
		Total Marks	100
Teaching Hours/Week (L:T:P: S)	3-0-0-0	Exam Hours	03
Total Hours of Pedagogy	40 hours	Credits	03
<p>Course objectives</p> <ul style="list-style-type: none"> • Understand about the fundamentals of Internet of Things and its building blocks along with their characteristics. • Understand the recent application domains of IoT in everyday life. • Gain insights about the current trends of Associated IOT technologists and IOT Analytics. 			
<p>Teaching-Learning Process</p> <p>These are sample Strategies, which teachers can use to accelerate the attainment of the various course outcomes.</p> <ol style="list-style-type: none"> 1. Lecturer method (L) need not to be only a traditional lecture method, but alternative effective teaching methods could be adopted to attain the outcomes. 2. Use of Video/Animation to explain functioning of various concepts. 3. Encourage collaborative (Group Learning) Learning in the class. 4. Ask at least three HOT (Higher order Thinking) questions in the class, which promotes critical thinking. 5. Adopt Problem Based Learning (PBL), which fosters students' Analytical skills, develop design thinking skills such as the ability to design, evaluate, generalize, and analyze information rather than simply recall it. 6. Introduce Topics in manifold representations. 7. Show the different ways to solve the same problem with different circuits/logic and encourage the students to come up with their own creative ways to solve them. 8. Discuss how every concept can be applied to the real world - and when that's possible, it helps improve the students' understanding 9. Use any of these methods: Chalk and board, Active Learning, Case Studies 			
Module-1 (8 hours of pedagogy)		L1,L2,L3	
<p>Basics of Networking: Introduction, Network Types, Layered network models</p> <p>Emergence of IoT: Introduction, Evolution of IoT, Enabling IoT and the Complex Interdependence of Technologies, IoT Networking Components</p> <p>Textbook 1: Chapter 1- 1.1 to 1.3 Chapter 4 – 4.1 to 4.4</p>			
Module-2 (8 hours of pedagogy)		L1,L2,L3	
<p>IoT Sensing and Actuation: Introduction, Sensors, Sensor Characteristics, Sensorial Deviations, Sensing Types, Sensing Considerations, Actuators, Actuator Types, Actuator Characteristics.</p> <p>Textbook 1: Chapter 5 – 5.1 to 5.9</p>			
Module-3 (8 hours of pedagogy)		L1,L2,L3	

IoT Processing Topologies and Types: Data Format, Importance of Processing in IoT, Processing Topologies, IoT Device Design and Selection Considerations, Processing Offloading.

Textbook 1: Chapter 6 – 6.1 to 6.5

Module-4 (8 ours of pedagogy)

L1,L2,L3

ASSOCIATED IOT TECHNOLOGIES

Cloud Computing: Introduction, Virtualization, Cloud Models, Service-Level Agreement in Cloud Computing, Cloud Implementation, Sensor-Cloud: Sensors-as-a-Service.

IOT CASE STUDIES

Agricultural IoT – Introduction and Case Studies

Textbook 1: Chapter 10– 10.1 to 10.6; Chapter 12- 12.1-12.2

Module-5 (8 hours of pedagogy)

L2,L3,L4

IOT CASE STUDIES AND FUTURE TRENDS

Vehicle IoT – Introduction

Healthcare IoT – Introduction, Case Studies

IoT Analytics – Introduction

Textbook 1: Chapter 13– 13.1; Chapter 14- 14.1-14.2; Chapter 17- 17.1

Course outcome (Course Skill Set)

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

CO1	Describe the evolution of IoT, IoT networking components, and addressing strategies in IoT.
CO2	Classify various sensing devices and actuator types.
CO3	Demonstrate the processing in IoT.
CO4	Explain Associated IOT Technologies
CO5	Illustrate architecture of IOT Applications

Assessment Details (both CIE and SEE)

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

Continuous Internal Evaluation(CIE):**Three Tests each of 20 Marks;**

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

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

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

Semester End Examination(SEE):

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

- The question paper shall be set for 100 marks. The medium of the question paper shall be English). The duration of SEE is 03 hours.
- The question paper will have 10 questions. Two questions per module. Each question is set for 20 marks. The students have to answer 5 full questions, selecting one full question from each module. The student has to answer for 100 marks and **marks scored out of 100 shall be proportionally reduced to 50 marks.**
- There will be 2 questions from each module. Each of the two questions under a module (with a maximum of 3 sub-questions) **should have a mix of topics** under that module

Suggested Learning Resources:**Books (Title of the Book/Name of the author/Name of the publisher/Edition and Year)**

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

Reference:

2. S. Misra, C. Roy, and A. Mukherjee, 2020. Introduction to Industrial Internet of Things and Industry 4.0. CRC Press.
3. Vijay Madiseti and Arshdeep Bahga, "Internet of Things (A Hands-on-Approach)", 1st Edition, VPT, 2014.
4. Francis daCosta, "Rethinking the Internet of Things: A Scalable Approach to Connecting Everything", 1st Edition, Apress Publications, 2013.

Web links and Video Lectures (e-Resources):

- 1. <https://nptel.ac.in/noc/courses/noc19/SEM1/noc19-cs31/>

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

- Demonstare a sensor based application
- Demonstare a IoT based application for smart campus

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

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2					1					
CO2	3			1								
CO3	3	1			1	1						1
CO4	2							1				
CO5	2	1		1								

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

Course Title	Communicative Skills in English-I	Semester	01
Course Code	MVJ22ENGK16	CIE	50
Total No. of Contact Hours	02	SEE	50
No. of Contact Hours/week	35 hours	Total	100
Credits	01	Exam Duration	3Hours

Course objective is to:

- To enhance their English vocabulary and language proficiency
- To communicate effectively and with self-confidence, in any given situation
- To master the Functionalish grammar and essential language skills
- To identify the nuances of phonetics, intonation and enhance their pronunciation skills

Language Lab:

To augment LSRW and Gvskills

(Listening, Speaking, Reading, Writing, Grammar and Vocabulary) through tests, activities, exercises etc. via comprehensive web-based learning and assessment systems

Module-1

RBTL Level
L1L2L3

Hours
7hrs

Syllabus Content:

Introduction to Technical Communication

- 1.1 Fundamentals of Communication Skills
- 1.2 Barriers to effective communication
- 1.3 The hallmark of effective communication
- 1.4 Distortion in Communication
- 1.5 Different styles in Communication – Formal and Informal
- 1.6 Types of Communication – oral, written, non-verbal
- 1.7 Interpersonal Communication Skills
- 1.8 Developing Interpersonal Skills
- 1.9 Information Transfer: Oral Presentation

Video Links/Any other special information (Papers): (For additional study on the concepts of contents)

<https://youtu.be/-Y-R9hDI7IU>

Module-2

RBTL Level
L1L2L3

Hours
7hrs

Syllabus Content:

Introduction to Listening Skills and Phonetics

- 1.1 Introduction to Phonetics
- 1.2 Phonetics symbols and transcription
- 1.3 Sounds Mispronounced
- 1.4 Speech Sounds: Vowels, Consonants and Diphthongs
- 1.5 Silent Letters
- 1.6 The magic 'e'
- 1.7 Homophones and Homonyms
- 1.8 Aspiration and Pronunciation of 'The'
- 1.9 Listening Comprehension
- 1.10 Articles: Use of Articles; common errors in the use of Articles

Video Links/Any other special information (Papers): (For additional study on the concepts of contents)

<https://youtu.be/T8LXnYpqMc4><https://youtu.be/adjaW0YSInU>https://youtu.be/-8g_TKJ6oiw

Module-3

RBTL Level
L1L2L3

Hours
7hrs

Syllabus Content:

Developing Listening Skills

- 1.1 Importance of listening in communication
- 1.2. Techniques for effective listening
- 1.3 Incongruencies in English pronunciation
- 1.4 Word Accent- Rules for Word Accent, Stress Shift
- 1.5 Sentence stress

1.6 Standard pronunciation

1.7 Plural forms

1.8 Question forms and intonation.

1.9 Prepositions, and those Prepositions often confused.

1.10 Prepositional phrases

1.11 Listening Comprehension

Video Links/Any other special information (Papers): (For additional study on the concepts of contents)

https://youtu.be/-8g_TKJ6oiw

Module-4

**RBTL Level
L1L2L3**

**Hours
7hrs**

Syllabus Content:

Speaking Skills and Vocabulary-1

1.1 Vocabulary used in everyday situations.

1.2 Word formation - Prefixes and Suffixes

1.3 Contractions

1.4 Words often confusing.

1.5 Question Tags

1.6 Synonyms

1.7 Antonyms

1.8 Spelling Rules and Words often Misspelt

1.9 The sequence of Tenses

Video Links/Any other special Information (Papers): (For additional study on the concepts of contents)

<https://youtu.be/w1v3ddhojSs>

Module-5

**RBTL Level
L1L2L3**

**Hours
7hrs**

Syllabus Content:

Speaking Skills and Vocabulary-2

1.1 Extempore Speaking / Public Speaking - Guidelines

1.2 Overcoming fears and inhibitions

- 1.3 Voicemodulation
- 1.4 MotherTongueInfluence(MTI)
- 1.5 TechniquesforNeutralization ofMotherTongueInfluence
- 1.6 ListeningComprehension
- 1.7 CommonErrorsinPronunciation
- 1.8 Speakingingivensituations–openinga bankaccount,visitingdoctor,attendinganinterview,gatheringinformation, making plans, making choices, congratulating, professing appreciation etc.

VideoLinks/Anyotherspecialinformation (Papers):(Foradditionalstudyontheconceptsofcontents)

<https://youtu.be/Y4TbGPhQ7Ik>https://youtu.be/JIKU_WT0BlS

Courseoutcomes:

CO1	UseEnglishthat isgrammaticallycorrectandidentifythenuancesofphonetics,intonationand flawlespronunciation
CO2	EnhancetherepertoireofEnglishvocabulary
CO3	Identify commonerrorsinspokenandwritten communication
CO4	Understandandimprovenon-verbalcommunicationand kinesics
CO5	Performwithconfidenceatcampusrecruitment,engineeringandallothercompetitiveexaminations

Textbooks:

1	EnglishCommunicationMadeEasy byChitraLaxman–SathyasriPrintersPvt.Ltd.
ReferenceBooks:	
1	TechnicalCommunication byGajendra SinghChauhanandEtal,CengagelearningIndiaPvt Limited[LatestRevisedEdition}-2018.
2	CommunicationSkills bySanjayKumarandPushpaLata,OxfordUniversityPress-2018
3	HighSchoolEnglishGrammar&Composition byWrenandMartin,SChandh&CompanyLtd.2015
4	EnglishLanguageCommunicationSkills-LabManualcumWorkbook ,CengagelearningIndiaPvt. Limited[LatestRevisedEdition}-2018
5	TechnicalCommunication-PrinciplesandPractice ,ThirdEditionbyMeenakshiRamanandSangeetha Sharron,OxfordUniversityPress2017
6	EffectiveTechnicalCommunication-SecondEdition byMAshrafRizvi,McGrawHillEducation (India)PrivateLimited-2018

CIEAssessment:

CIE is based on quizzes, tests, assignments/seminars and any other form of evaluation. Generally, there will be: Two Internal Assessment (IA) tests during the semester (25 marks each), the final IA mark to be awarded will be the average of two tests.

-Assignments and activities (25 marks)

SEE Assessment:

x. Question paper for the SEE consists of two parts i.e. Part A and Part B. Part A is compulsory and consists of objective questions of 1 mark each for a total of 40 marks covering the whole syllabus.

xi. Part B also covers the entire syllabus consisting of one question having choices, carrying 10 marks. One question must be set from units having descriptive topics. The duration of examination is 2 hours.

CO-PO Mapping												
CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1										1		
CO2										1		
CO3										2		
CO4										1		
CO5										3		

High-3, Medium-2, Low- 1

Semester: I		
CONSTITUTION OF INDIA, PROFESSIONAL ETHICS AND CYBER LAW (Theory)		
Course Code: MVJ22ICOK17		CIE Marks:50
Credits: L:T:P: 1:0:0		SEE Marks: 50
Hours:15L		SEE Duration: 02 Hours
Course Learning Objectives: The students will be able to		
1	To know the fundamental political codes, structure, procedures, powers, and duties of Indian constitution, Indian government institutions, fundamental rights, directive principles and the duties of the citizens.	
2	To provide overall legal literacy to the young technocrats to manage complex societal issues in the present scenario.	
3	To understand engineering ethics & their responsibilities, identify their individual roles and ethical responsibilities towards society.	

UNIT-I		L1,L2
Introduction to Indian Constitution The Necessity of the Constitution, The Societies before and after the Constitution adoption. Introduction to the Indian Constitution, The Making of the Constitution, The role of the Constituent Assembly – Preamble and Salient features of the Constitution of India. Fundamental Rights and its Restriction and Limitations in different Complex Situations. Directive Principles of State Policy (DPSP) and its present relevance in our society with examples. Fundamental Duties and its Scope and Significance in Nation Building.		3Hrs
UNIT-II		L1,L2
Union Executive and State Executive: Parliamentary System, Federal System, Centre-State Relations. Union Executive – President, Prime Minister, Union Cabinet, Parliament - LS and RS, Parliamentary Committees, Important Parliamentary Terminologies. Supreme Court of India, Judicial Reviews and Judicial Activism. State Executives – Governor, Chief Minister, State Cabinet, State Legislature, High Court and Subordinate Courts, Special Provisions (Article 370, 371, 371J) for some States.		3Hrs
UNIT-III		L1,L2
Elections, Amendments and Emergency Provisions: Elections, Electoral Process, and Election Commission of India, Election Laws. Amendments - Methods in Constitutional Amendments (How and Why) and Important Constitutional Amendments. Amendments – 7,9,10,12,42,44,61,73,74,75,86, and 91,94,95,100,101,118 and some important Case Studies. Recent Amendments with explanation. Important Judgements with Explanation and its impact on society (from the list of Supreme Court Judgements). Emergency Provisions, types of Emergencies and its consequences. Constitutional Special Provisions: Special Constitutional Provisions for SC & ST, OBC, Special Provision for Women, Children & Backward Classes.		3Hrs
UNIT-IV		L1,L2
Professional / Engineering Ethics: Scope & Aims of Engineering & Professional Ethics - Business Ethics, Corporate Ethics, Personal Ethics. Engineering and Professionalism,		3Hrs

Positive and Negative Faces of Engineering Ethics, Code of Ethics as defined in the website of Institution of Engineers (India) : Profession, Professionalism, Professional Responsibility. Clash of Ethics, Conflicts of Interest. Responsibilities in Engineering - Responsibilities in Engineering and Engineering Standards, the impediments to Responsibility. Trust and Reliability in Engineering, IPRs (Intellectual Property Rights), Risks, Safety and liability in Engineering.	
UNIT-V	L1,L2
Internet Laws, Cyber Crimes and Cyber Laws: Internet and Need for Cyber Laws, Modes of Regulation of Internet, Types of cyber terror capability, Net neutrality, Types of Cyber Crimes, India and cyber law, Cyber Crimes and the information Technology Act 2000, Internet Censorship, Cybercrimes and enforcement agencies.	3Hrs

Course Outcomes: After completing the course, the students will be able to	
CO1	Have constitutional knowledge and legal literacy
CO2	Understand Engineering and Professional ethics and responsibilities of Engineers.
CO3	Understand the cyber crimes and cyber laws for cyber safety measure.
Reference Books	
1.	Constitution of India and Professional Ethics, T.S. Anupama, Sunstar Publisher
2.	Durga Das Basu (DD Basu): "Introduction to the Constitution on India", (Students Edition.) Prentice –Hall EEE, 19 th /20 th Edn., (Latest Edition) or 2008.
3.	Shubham Singles, Charles E. Haries, and Et al : "Constitution of India and Professional Ethics" by Cengage Learning India Private Limited, Latest Edition – 2018.

Continuous Internal Evaluation (CIE):

Theory for 50 Marks

CIE for 50 marks, executed by way of tests (T) and assignments. A minimum of three quizzes are conducted along with tests. Test portion is evaluated for 40 marks and assignment is evaluated for 10 marks. The three tests are conducted for 40 marks each and the average of all the tests are calculated for 40. The marks for the assignments are 10 (2 assignments for 5 marks each). The marks obtained in test and assignment are added and report CIE for 50 marks.

Semester End Examination (SEE):

SEE for 50 marks, executed by means of an examination. The Question paper contains objective type questions for 50 marks covering the entire syllabus having same complexity in terms of COs and Bloom's taxonomy level.

Total marks: 50+50=100

CO-PO Mapping												
CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	-	-	-	-	-	2	2	-	-	1	2	-
CO2	-	-	-	-	-	2	2	-	-	1	2	-
CO3	-	-	-	-	-	2	2	-	-	1	2	-

Semester: I		
SCIENTIFIC FOUNDATIONS OF HEALTH (Theory)		
Course Code: MVJ22SFHK18		CIE Marks:50
Credits: L:T:P: 1:0:0		SEE Marks: 50
Hours:15L		SEE Duration: 02 Hours
Course Learning Objectives: The students will be able		
1	To know about Health and wellness (and its Beliefs) & It's balance for positive mindset.	
2	To Build the healthy lifestyles for good health for their better future.	
3	To Create a Healthy and caring relationships to meet the requirements of good/social/positive life.	
4	To learn about Avoiding risks and harmful habits in their campus and outside the campus for their bright future	
5	To Prevent and fight against harmful diseases for good health through positive mindset	

UNIT-I	L1,L2
Good Health & It's balance for positive mindset: Health -Importance of Health, Influencing factors of Health, Health beliefs, Advantages of good health, Health & Behavior, Health & Society, Health & family, Health & Personality, Psychological disorders-Methods to improve good psychological health, Changing health habits for good health.	3Hrs
UNIT-II	L1,L2
Building of healthy lifestyles for better future: Developing healthy diet for good health, Food & health, Nutritional guidelines for good health, Obesity & overweight disorders and its management, Eating disorders, Fitness components for health, Wellness and physical function, How to avoid exercise injuries	3Hrs
UNIT-III	L1,L2
Creation of Healthy and caring relationships: Building communication skills, Friends and friendship - Education, the value of relationship and communication skills, Relationships for Better or worsening of life, understanding of basic instincts of life (more than biology), Changing health behaviours through social engineering.	3Hrs
UNIT-IV	L1,L2
Avoiding risks and harmful habits : Characteristics of health compromising behaviors, Recognizing and avoiding of addictions, How addiction develops, Types of addictions, influencing factors of addictions, Differences between addictive people and non-addictive people & their behaviors. Effects of addictions Such as..., how to recovery from addictions.	3Hrs
UNIT-V	L1,L2
Preventing & fighting against diseases for good health: How to protect from different types of infections, How to reduce risks for good health, Reducing risks & coping with chronic conditions, Management of chronic illness for Quality of life, Health & Wellness of youth :a challenge for upcoming future, Measuring of health & wealth status.	3Hrs

Course Outcomes: After completing the course, the students will be able to

CO1	Understand and analyse about Health and wellness (and its Beliefs) & It's balance for positive mindset.
CO2	Develop the healthy lifestyles for good health for their better future.
CO3	Build a Healthy and caring relationships to meet the requirements of good/social/positive life.
CO4	Learn about Avoiding risks and harmful habits in their campus and outside the campus for their bright future
CO5	Prevent and fight against harmful diseases for good health through positive mindset.
Reference Books	
1.	"Scientific Foundations of Health" – Study Material Prepared by Dr. L Thimmesha, Published in VTU - University Website
2.	"Scientific Foundations of Health", (ISBN-978-81-955465-6-5) published by Infinite Learning Solutions, Bangalore – 2022.
3.	Health Psychology - A Textbook, FOURTH EDITION by Jane Ogden McGraw Hill Education (India) Private Limited - Open University Press.
4	Health Psychology (Second edition) by Charles Abraham, Mark Conner, Fiona Jones and Daryl O'Connor – Published by Routledge 711 Third Avenue, New York, NY 10017.
5	HEALTH PSYCHOLOGY (Ninth Edition) by SHELLEY E. TAYLOR - University of California, Los Angeles, McGraw Hill Education (India) Private Limited - Open University Press.

Continuous Internal Evaluation (CIE):

Theory for 50 Marks

CIE for 50 marks, executed by way of tests (T) and assignments. The three tests are conducted by means of an MCQ examination for 50 marks each and the average of all the tests are calculated for 40. The marks for the assignments are 10 (2 assignments for 5 marks each). The marks obtained in test and assignment are added and report CIE for 50 marks.

Semester End Examination (SEE):

SEE for 50 marks, executed by means of an examination. The Question paper contains objective type questions for 50 marks covering the entire syllabus having same complexity in terms of COs and Bloom's taxonomy level.

Total marks: 50+50=100

CO-PO Mapping												
CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	-	-	-	-	-	-	-	-	1	-	-	1
CO2	-	-	-	-	-	-	-	-	1	-	-	1
CO3	-	-	-	-	-	-	-	-	1	-	-	1
CO4	-	-	-	-	-	-	-	-	1	-	-	1
CO5	-	-	-	-	-	-	-	-	1	-	-	1