Course Title	Mathematics-II for Computer Science and Engineering stream	**Semester**	I
Course Code	MVJ22MATS21	**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-II for Computer Science and Engineering Stream is to

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

Module-1	**L1, L2& L3**	**8 Hours**

Introduction to Integral Calculus in Computer Science &Engineering.

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

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

Self-Study: Center of gravity, Duplication formula.

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

Module-2	**L1, L2& L3**	**8 Hours**

Introduction to Vector Calculus in Computer Science & Engineering.

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

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

Self-Study: Vector integration and Vector line integral.

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

Module-3	**L1,L2 &L3**	**8 Hours**

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

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

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

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

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

Module-4	**L1,L2 & L3**	**8 Hours**

Importance of numerical methods for discrete data in the field of computer science and Engineering.

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

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

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

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

Applications: Estimating the approximate roots, extremum values, area, volume, and surface area. Finding approximate solutions to civil engineering problems.

Module-5	**L1,L2 & L3**	**8 Hours**

Introduction to various numerical techniques for handling computer science and Engineering applications.

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

Self-Study: Adam-Bashforth method.

Applications: Finding approximate solutions to ODE related to civil engineering fields.

List of Laboratory experiments

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

Course outcomes:

CO1	Apply the concept of change of order of integration and variables to evaluate multiple integrals and their usage in computing area and volume.
CO2	Understand the applications of vector calculus refer to solenoidal, and irrotational vectors. Orthogonal curvilinear coordinates.
CO3	Demonstrate the idea of Linear dependence and independence of sets in the vector space,

	and linear transformation.
CO4	Apply the knowledge of numerical methods in solving physical and engineering phenomena.
CO5	Get familiarize with modern mathematical tools namely MATHEMATICA/MATLAB/PYTHON/SCILAB

Text Books:	
1	B.S. Grewal, "Higher Engineering Mathematics" Khanna Publishers, 43rd Edition, 2013.
2	Erwin Kreyszig, "Advanced Engineering Mathematics", Wiley-India publishers, 10thedition,2014.
3	N.P.Bali and Manish Goyal: A Text Book of Engineering Mathematics, Laxmi Publishers, 7th 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, 1stedition, 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	3	0	0	0	0	0	0	1	1
CO2	3	3	0	2	0	0	0	0	0	0	0	0
CO3	3	3	0	3	0	0	0	0	0	0	1	1
CO4	3	3	2	3	0	0	0	0	0	0	2	2
CO5	3	3	3	3	0	0	0	0	0	0	3	3

High-3, Medium-2, Low-1

Course Title	**Applied Chemistry for Computer Science& Engineering stream**	Semester	I/II
Course Code	**MVJ22CHES12/22**	**CIE**	50
TeachingHours/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+10to12Lab slots		

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

Module-1	**L1,L2**	8Hrs.

Sensors and Energy Systems

Sensors:

Introduction, working, principle and applications of Conductometric sensors, Electrochemical sensors, Thermometric sensors (Flame photometry) and Optical sensors (colorimetry).

Sensors for the measurement of dissolved oxygen (DO).Electrochemical sensors for the pharmaceuticals. Electrochemical gas sensors for SOx and NOx.Disposable sensors in the detection of biomolecules and pesticides.

Energy Systems:Introduction to batteries ,construction ,working and applications of Lithium ion and So dium ion batteries. Quantum Dot Sensitized SolarCells (QDSSC's)-Principle, PropertiesandApplications.

Self-learning: Types of electrochemical sensor, Gas sensor - O_2 sensor, Biosensor –Glucose sensors.

Module-2	**L1,L2**	8 Hrs.

Materials for Memory and Display Systems

Memory Devices: Introduction, Basic concepts of electronic memory, History of organic/polymer electronic memory devices, Classification of electronic memory devices, types of organic memory devices (organic molecules,polymeric materials ,organic- inorganic hybrid materials).

Display Systems:Photoactive and electroactive materials,Nanomaterials and organic materials used in optoelectronic devices. 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), Light emitting electrochemical cells.

Self-learning: Properties and functions of Silicon (Si), Germanium (Ge),Copper(Cu), Aluminium(Al) ,and Brominated flame retardants incomputers.

	L1,L2,L3	8 Hrs.
Module-3		

Corrosion and Electrode System

Corrosion Chemistry:

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

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.Concentrationcell– Definition, construction and Numerical problems.

Analytical Techniques: Introduction, principle and instrumentation of Conductometry; itsapplication in the estimation of weak acid. Potentiometry; its application in the estimationofiron.

Self-learning:IRandUV-Visiblespectroscopy.

Module-4	**L1,L2,L3**	8Hrs.

Polymers and Green Fuels

Polymers: Introduction, Molecularweight- Number average,weight average and numerical problems.Preparation, properties ,and commercial applications of kevlar.Conducting polymers–synthesis and conducting mechanism of polyacetylene and commercial applications.

Green Fuels: Introduction, construction and working of solar photovoltaic cell, advantages,and disadvantages. Generation of energy (green hydrogen) by electrolysis of water and itsadvantages.**Self-learning:**Regenerative fuel cells

Module-5	**L1,L2,L3**	8Hrs.

E- Waste Management

E-Waste:

Introduction, sources of e-waste, Composition, Characteristics, and Need of e-waste management.Toxic materials used in manufacturing electronic and electrical products, health hazards due to exposure to e-waste. Recycling and Recovery: Different approaches of recycling (separation, thermal treatments, hydrometallurgical extraction,pyro metallurgical methods, direct recycling). Extraction of gold from E-waste. Role of stakeholdersin environmental management of e-waste (producers, consumers, recyclers, andstatutorybodies).

Self-learning: Impact of heavy metals on environment and human health.

Reference Books:

1. Wiley Engineering Chemistry,Wiley India Pvt.Ltd.NewDelhi,2013-2nd Edition.

2.	Engineering Chemistry, Satyaprakash & Manisha Agrawal,Khanna Book Publishing, Delhi
3.	A TextBook of Engg.Chemistry,Shashi Chawla, Dhanpat Rai & Co.(P)Ltd.
4.	Essentials of Physical Chemistry, Bahl &Tuli, S.Chand Publishing
5.	A Textbook of Engineering Chemistry, SSDara & Dr.SSUmare ,S Chand & Company Ltd. ,12thEdition ,2011

PRACTICAL MODULE

A–Demonstration(anytwo)offline/virtual:

A1.ChemicalStructure drawing using software:ChemDraworACD/ChemSketch
A2. Determination of strength of an acid in Pb-acid battery
A3: Synthesis of Iron-oxide Nanoparticles
A4.Electrolysis of water

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

B1.Conductometric estimation of acid mixture
B2.Potentiometric estimation of FAS using $K_2Cr_2O_7$
B3.Determination of pK_a of vinegar using pH sensor
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 coefficien to flubricant (Ostwald'sviscometer)
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 in industrial waste water sample .

D–Open Ended Experiments (any two):

D1:Evaluation of acid content in beverages by using pH sensors and simulation.
D2.Construction of photo voltaic cell.
D3.Design an experiment to Identify the presence of proteins in givensample.
D4.Searching suitable PDB file and target for molecular docking.

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 in sciplinary situations

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 semesterend 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)
- 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):

- 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 oflearning.
- Appropriate Models, Power Point presentation, Charts, Videos, shall be used to enhance visualization before hands onpractice.
- For application problems use very generally available actual objects. (Example: For rectangular prism / object; matchbox, carton boxes, book, etc can be used. Similarly for othershapes)
- Use any CAD software for generating orthographic and pictorialviews.
- Make use of sketch book with graph sheets for manual / preparatorysketching

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 1st and 3rd 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).

Application on projections of Lines & Planes (For CIE only)

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.

Projections of Frustum of cone and pyramids (For practice only, not for CIE and SEE).

Module-3	L1,L2,L3	5 h

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.
Conversion of simple isometric drawings into orthographic views.
Problems on applications of Isometric projections of simple objects / engineering components.
Introduction to drawing views using 3D environment (For CIE only).

Module-4	L1,L2,L3	5 h

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.
Problems on applications of development of lateral surfaces of transition pieces connecting circular duct and rectangular duct (For CIE Only)

Module-5	L2,L3,L4	5 h

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.

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

- **CO 1.** Drawand communicate the objects with definite shape and dimensions
- **CO 2.** Recognize andDraw 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) takentogether.

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 compriseofContinuous evaluation of Drawing work of students as and when the Modules are covered based onbelow detailedweightage.

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 **20Mark**s.
- 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 by50%
- 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 theexaminers.
- Scheme of Evaluation: *To be defined by the examiners jointly and the same shall be submitted to the university along with questionpaper.*
- One full question shall be set from each of the Module from Modules 1,2,3 and 4 as per the below tabled weightage details. ***However, the student may be awarded full marks, if he/she completes solution on computer display withoutsketch.***

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, 39thEdition, 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

Semester: II		
Introduction to Electrical Engineering (Theory)		
Course Code:	**MVJ22ESCK24B**	**CIE Marks: 50**
Credits:	**L: T:P 3:0:0**	**SEE Marks: 50**
Hours:	**40L**	**SEE Duration: 3 Hrs.**
Course Learning Objectives: The students will be able to		
1	To explain the laws used in the analysis of DC and AC circuits.	
2	To explain the behavior of circuit elements in single-phase circuits.	
3	To explain the construction and operation of transformers, DC generators and motors and induction motors.	
4	To introduce concepts of circuit protecting devices and earthing.	
5	To explain electric power generation, transmission and distribution, electricity billing, equipment and personal safety measures.	

UNIT-I	
Introduction:Conventional and non-conventional energy resources; General structure of electrical power systems using single line diagram approach. Power Generation: Hydel, Nuclear, Solar & wind power generation (Block Diagram approach). **DC Circuits**: Ohm's Law and its limitations. KCL & KVL, series, parallel, series-parallel circuits. Simple Numerica	**8 Hrs**
UNIT-II	
A.C. Fundamentals: Equation of AC Voltage and current, waveform, time period, frequency, amplitude, phase, phase difference, average value, RMS value, form factor, peak factor. (only definitions) Voltage and current relationship with phasor diagrams in R, L, and C circuits. Concept of Impedance. Analysis of R-L, R-C, R-L-C Series circuits.Active power, reactive power and apparent power. Concept of power factor. (Simple Numerical). **Three Phase Circuits**: Generation of Three phase AC quantity, advantages and limitations; star and delta connection, relationship between line and phase quantities (excluding proof)	**8 Hrs**
UNIT-III	
DC Machines: DC Generator: Principle of operation, constructional details, induced emf expression, types of generators.Relation between induced emf and terminal voltage.Simple numerical. **DC Motor:** Principle of operation, back emf and its significance. Torque equation, types of motors, characteristics and speed control (armature & field)of DC motors(series & shunt only). Applications of DC motors. Simple numerical.	**8 Hrs**
UNIT-IV	

Transformers: Necessity of transformer, principle of operation, Types and construction of singlephase transformers, EMF equation, losses, variation of losses with respect to load. Efficiency and simple numerical. **Three-phase induction Motors**: Concept of rotating magnetic field, Principle of operation, constructional features of motor, types – squirrel cage and wound rotor. Slip and its significance simple numerical	**8 Hrs**
UNIT-V	
Domestic Wiring: Requirements, Types of wiring: casing, capping.Two way and three way control of load. **Electricity Bill:** Power rating of household appliances including air conditioners, PCs, laptops, printers, etc. Definition of "unit" used for consumption of electrical energy, two-part electricity tariff, calculation of electricity bill for domestic consumers. **Equipment Safety measures:** Working principle of Fuse and Miniature circuit breaker (MCB), merits and demerits. **Personal safety measures:** Electric Shock, Earthing and its types, Safety Precautions to avoid shock.	**8 Hrs**

Course Outcomes: After completing the course, the students will be able to	
CO1	Understand the concepts of various energy sources and Electric circuits.
CO2	Apply the basic Electrical laws to solve circuits.
CO3	Discuss the construction and operation of various Electrical Machines.
CO4	Identify suitable Electrical machine for practical implementation.
CO5	Explain the concepts of electric power transmission and distribution, electricity billing, circuit protective devices and personal safety measures.

Reference Books	
1.	Basic Electrical Engineering by D C Kulshreshtha, Tata McGraw Hill, First Edition 2019.
2.	A text book of Electrical Technology by B.L. Theraja, S Chand and Company, reprint edition 2014.
3.	Basic Electrical Engineering, D. P. Kothari and I. J. Nagrath, Tata McGraw Hill 4th edition, 2019.
4.	Principles of Electrical Engineering & Electronics by V. K. Mehta, Rohit Mehta, S. Chand and Company Publications, 2nd edition, 2015.

Continuous Internal Evaluation (CIE):

Theory for 50 Marks

CIE is executed by way of quizzes (Q), tests (T) and assignments. A minimum of three quizzes are conducted along with tests. Test portion is evaluated for 50 marks and quiz is evaluated for 10 marks. Faculty may adopt innovative methods for conducting quizzes effectively. The number of quizzes may be more than three (conduct additional quizzes and take best three). The three tests are conducted for 50 marks each and the average of all the tests are calculated for 50. The marks for the assignments are 20 (2 assignments for 10 marks each). The marks obtained in test, quiz and assignment are added to get marks out of 100 and report CIE for 50 marks.

Semester End Examination (SEE):

SEE for 50 marksis executed by means of an examination. The Question paper for each course contains two parts, Part – A and Part – B. Part – A consists of objective type questions for 20 marks covering the entire syllabus. Part – B Students have to answer five questions, one from each unit for 16 marks adding up to 80 marks. Each main question may have a maximum of three sub divisions. Each unit will have internal choice in which both questions cover entire unit 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	3	3	0	3	0	0	0	0	0	0	1	0
CO2	3	3	0	3	0	0	0	0	0	0	0	1
CO3	2	3	0	3	0	0	0	0	0	0	1	0
CO4	3	3	0	3	0	0	0	0	0	0	0	0
CO5	3	3	0	2	0	0	0	0	0	0	0	1

Course Title	IntroductiontoC++Programming	**Semester**	II
CourseCode	MVJ22PLCK25D	**CIE**	50
TotalNo.ofContact Hours	50L : T : P::2 : 0 : 2	**SEE**	50
CourseType	Integrated	**Total**	100
Credits	3	**Exam.Duration**	3 Hours

Courseobjectives:

- Understandingaboutobjectorientedprogrammingand Gainknowledgeaboutthe capability to store information together in an object.
- Understandthecapabilityofaclass to relyuponanotherclassand functions.
- Understandaboutconstructorswhicharespecialtypeof functions.
- Createandprocessdatainfilesusingfile I/Ofunctions
- Usethe genericprogrammingfeatures ofC++includingException handling

Module-1	**L1, L2&L3**	**8 Hours**

Introduction to Object Oriented Programming: Computer programming background- C++ overview. First C++ Program -Basic C++ syntax, Object Oriented Programming: What is an object, Classes, methods and messages, abstraction and encapsulation, inheritance, abstract classes, polymorphism.

Module-2	**L1, L2&L3**	**8 Hours**

Functions in C++: Tokens – Keywords – Identifiers and constants – Operators in C++ – Scope resolution operator – Expressions and their types – Special assignment expressions – Function prototyping – Call by reference – Return by reference – Inline functions -Default arguments – Function overloading.

Module-3	**L1,L2 &L3**	**8 Hours**

Inheritance&Polymorphism:DerivedclassConstructors,destructors-TypesofInheritance-Defining Derived classes, Single Inheritance, Multiple, Hierarchical Inheritance, Hybrid Inheritance.

Module-4	**L1,L2&L3**	**8 Hours**

I/OStreams: C++ClassHierarchy-FileStream-TextFileHandling-BinaryFileHandlingduringfile operations.

Module-5	**L1,L2&L3**	**8 Hours**

ExceptionHandling:IntroductiontoException-BenefitsofExceptionhandling-Tryandcatch blockThrow statement- Pre-defined exceptions in C++

ListofLaboratoryexperiments	
1.	WriteaC++programto sortthe elementsin ascendingand descendingorder
2.	WriteaC++program tofind thesum ofall thenatural numbersfrom 1to n.
3.	WriteaC++program to swap 2 values bywritingafunction that uses call byreferencetechnique
4.	WriteaC++programto demonstratefunctionoverloadingforthefollowingprototypes.add(int a, int b) add(doublea,doubleb)
5.	Create a class named Shape with a function that prints "This is a shape". Create another class namedPolygon inheriting the Shape class with the same function that prints "Polygon is a shape". Create twoother classes named Rectangle and Triangle having the same function which prints "Rectangle is apolygon" and"Triangleis a polygon" respectively.Again, make anotherclass named Square havingthe same function which prints "Square is a rectangle". Now, try calling the function by the object ofeachof theseclasses.
6.	1.SupposewehavethreeclassesVehicle,FourWheeler,andCar.TheclassVehicleisthebaseclass,the class FourWheeler is derived from it and the class Car is derived from the class Four Wheeler. ClassVehiclehasamethod'vehicle'thatprints'Iamavehicle',classFourWheelerhasamethod'four Wheeler'thatprints'Ihavefourwheels',andclassCarhasamethod'car'thatprints'Iamacar'.So, as this is a multi-level inheritance; we can have access to all the other classes methods from theobject of the class Car. We invoke all the methods from a Car object and print the correspondingoutputs of themethods. So,ifweinvokethemethods in thisorder, car(), fourWheeler(), andvehicle(), then theoutput will be Iam acar Ihavefourwheels Iam a vehicle WriteaC++programto demonstratemultilevel inheritanceusingthis.
7.	WriteaC++programtocreateatextfile,checkfilecreatedornot,ifcreateditwillwritesometextintothe fileand then read the text from thefile.
8.	Writea C++programto writeand readtime in/frombinaryfileusingfstream
9.	Writeafunctionwhichthrowsadivisionbyzeroexceptionandcatchitincatchblock.WriteaC++programto demonstrateusageof try, catchand throwto handleexception.
10.	WriteaC++programfunctionwhichhandlesarrayof boundsexceptionusingC++.

Course outcomes:	
CO1	Abletounderstandanddesignthesolutiontoaproblemusingobject-oriented programmingconcepts.
CO2	AbletoreusethecodewithextensibleClasstypes,User-definedoperatorsand function Overloading.
CO3	AchievecodereusabilityandextensibilitybymeansofInheritanceand Polymorphism
CO4	ImplementthefeaturesofC++includingtemplates,exceptionsandfilehandlingfor providing programmed solutions to complex problems.

Assessment:

AssessmentDetails (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.

ContinuousInternalEvaluation(CIE):

TheCIEmarksforthetheorycomponentoftheICshallbe**30marks**andforthelaboratory component **20Marks**.

CIEforthe theorycomponentoftheIC (Integrated Course):

ThreeTestseachof20Marks**;**afterthecompletionofthesyllabusof35-40%,65-70%,and 90-100%respectively.

TwoAssignments/twoquizzes/seminars/onefieldsurveyandreportpresentation/one- course project totaling20 marks.

CIEforthe practicalcomponentoftheIC (Integrated Course):

- On completion of every experiment/program in the laboratory, the students shall be evaluatedandmarksshallbeawardedonthesameday.The**15marks**areforconducting theexperimentandpreparationofthelaboratoryrecord,theother**05marksshallbeforthetest** conducted at the end of the semester.
- The CIE marks awarded in the case of the Practical component shall bebasedon continuous evaluation of the laboratory report. Each experiment report can be evaluated for10marks.Marks ofallexperiments'write-upsareaddedandscaleddownto15marks.
- Thelaboratorytest**(duration03hours)**attheendofthe15thweekofthesemester/aftercompletiono

fallexperiments(whicheverisearly)shallbeconductedfor50 marks and scaled down to **05marks.**

- Scaled-downmarksofwrite-upevaluationsandtestsaddedwillbeCIEmarksforthelaboratory component of IC/IPCC for **20marks**.
- TheminimummarkstobesecuredinCIEtoappearforSEEshallbe12(40%ofmaximum marks) in the theory component and 08 (40% of maximum marks) in the practical component. The laboratory component of the IC/IPCC shall be for CIE only. However, in SEE,thequestionsfromthelaboratorycomponentshallbeincluded**.**Themaximumof05 questions is to be set from the practical component of IC/IPCC, the total marks ofall questions should not be more than 25 marks.

ThetheorycomponentoftheICshallbeforbothCIEandSEE.

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 paperwillcontaintwoparts,namelyPART-Afor20MarksandPART-Bfor80Marks.Thequestion 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. Thestudents haveto 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.

PracticalSemesterEnd Examination(SEE):

- TheminimummarkstobesecuredinCIEtoappearforSEEshallbe12(40%ofmaximummarks- 30) in the theory component and 08 (40% of maximum marks -20) in the practical component. The laboratory component of the IPCC shall be for CIE only. However, in SEE, the questions from the laboratorycomponent shall be included**.**

Themaximum of 04/05 questions to be set from the practical

- SEE will be conducted for 100 marks and students shall secure 35% of the maximum marks to qualify for the SEE. Marks secured will be scaled down to 50.

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

High-3,Medium-2,Low-1

CourseTitle	Professional Writing Skills in English	**Semester**	02
CourseCode	MVJ22PWSK26	**CIE**	50
TotalNo.ofContactHours	02	**SEE**	50
No.ofContactHours/week	35hours	**Total**	100
Credits	01	**Exam.Duration**	3Hours

Courseobjectiveisto:

- To use Englishvocabularyaptlyandflawlessly andensurelanguage proficiency.
- ToachievebettertechnicalwritingandPresentationskills
- ToIdentifythecommonerrorsinSpokenandWrittenEnglish
- ToacquireEmploymentandWorkplacecommunicationskills

LanguageLab:

ToaugmentLSRWandGVskills(Listening,Speaking,Reading,Writing,GrammarandVocabulary)throughtests,activities,exercisesetc.viacomprehensiveweb-basedlearningandassessmentsystems

Module-1	**RBTLevel**	**Hours**

SyllabusContent:

IntroductiontoTechnicalCommunication

1.1 SubjectVerbAgreement(ConcordRuleswithExercises)

1.2 CommonerrorsinSubject-verbagreement,Noun-pronounagreement

1.3 Common errors in the use of Adjectives, Adverbsand Conjunctions; misplacedmodifiers

1.4 WordOrder,errorsduetotheconfusionofwords

1.5 Anagrams,palindromes,puns

1.6 Idiomsandphrases–commonerrors

1.7.Honingreadingskills

VideoLinks/Anyotherspecialinformation (Papers):(Foradditionalstudyontheconceptsofcontents)

Module-2	**RBTLevel**	**Hours 7hrs**

SyllabusContent:

TheNuancesofWriting

1.1 OrganizingPrinciplesofParagraphsinDocuments

1.2 Developinghintsintoorganizedparagraphs

1.3 Dialoguewriting.

1.4 Contextualvocabulary

1.5 ImportanceofproperPunctuation

1.6 One-wordsubstitutes

1.7 Polishingwritingskills–similesandmetaphors

1.8 TheArtofCondensation(Precisewriting)

1.9 Wordcollocations

1.10 Redundancyandjargoninwriting

1.11 Techniquesincreativewriting

1.12 CommonErrorsduetoIndianisminEnglishCommunication

VideoLinks/Anyotherspecialinformation (Papers):(Foradditionalstudyontheconceptsofcontents)

Module-3	**RBTLevel**	**Hours 7hrs**

SyllabusContent:

HoningWritingSkills

1.1 EffectiveTechnicalReadingandWritingPractices

1.2 Tipsforgoodandeffectivewriting

1.3 Parallelisminsentencestructures

1.4 Describingprocesses

1.5 Interpretationofnon-verbaldata–pie-charts,flowchartsetc.

1.6 UseofPassiveVoicesinReportwriting

1.7 Reportwriting.

1.8 SentenceImprovementExercises,ClozeTestandThemeDetectionExercises.

VideoLinks/Anyotherspecialinformation (Papers):(Foradditionalstudyontheconceptsofcontents)

Module-4	**RBTLevel**	**Hours 7hrs**

SyllabusContent:

WritingEmails andLetters

1.1 ComponentsofaFormalLetter

1.2 FormatsandTypesofBusinessLetters

1.3 EmailWriting–DosandDon’ts

Practiceinwritingvarioustypesofemails. VideoLinks/Anyotherspecialinformation (Papers):(Foradditionalstudyontheconceptsofcontents)

Module-5	**RBTLevel**	**Hours 7hrs**

SyllabusContent:

Non-VerbalCommunication

1.1 Significanceofnon-verbalcommunication

1.2 BodyLanguage

1.3 GroupDiscussion

1.4. Describingpeople

1.5. Describingeventsandscenes

1.4Presentationskills andFormalPresentationsbyStudents

VideoLinks/Anyotherspecialinformation (Papers):(Foradditionalstudyontheconceptsofcontents)

Courseoutcomes:	
CO1	Identifycommonerrors inSpoken andWrittencommunication
CO2	Reach higherlevelsofperfectioninEnglishvocabularyandlanguage
CO3	Improvenatureandstyleofsensiblewritingandacquire employmentandworkplacecommunication. skills
CO4	ImprovetheirTechnicalCommunicationSkillsthrough TechnicalReadingand Writingpractices
CO5	Perform wellatcampusrecruitment,engineeringandothercompetitive examinations

Textbooks:	
1	**EnglishCommunicationMadeEasy**byChitraLaxman–SathyasriPrintersPvt.Ltd.
ReferenceBooks:	
1	**TechnicalCommunication**byGajendra SinghChauhanandEtal, CengagelearningIndiaPvtLimited [LatestRevisedEdition}-2018.
2	**CommunicationSkills**by SanjayKumarandPushpa Lata, Oxford UniversityPress-2018
3	**HighSchoolEnglishGrammar&Composition**byWrenandMartin,SChandh&CompanyLtd.2015
4	**EnglishLanguageCommunicationSkills-LabManualcumWorkbook,**CengagelearningIndiaPvt. Limited[LatestRevisedEdition}-2018
5	**TechnicalCommunication-**PrinciplesandPractice,ThirdEditionbyMeenakshiRamanandSangeetha Sharron,OxfordUniversityPress2017
6	**EffectiveTechnicalCommunication-**SecondEditionbyMAshrafRizvi,McGrawHillEducation(India) PrivateLimited-2018

CIEAssessment:

CIEisbasedonquizzes,tests,assignments/seminarsandanyotherformofevaluation.Generally,therewillbe:TwoInternal Assessment(IA)testsduringthesemester(25markseach),thefinalIAmarkstobeawardedwillbetheaverageoftwotests.

-Assignmentsand activities(25marks)

SEEAssessment:

i. Question paper for the SEE consists of two parts i.e. Part A and Part B. Part A is compulsory and consists objective questions of1 mark each fortotal of40marks coveringthewholesyllabus.

ii. Part B also covers the entire syllabus consisting of one question having choices,carrying10marks.Onequestionmustbesetfromunits having descriptive topics.Thedurationofthe examinationis2hours.

CO-POMapping

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

High-3,Medium-2,Low-1

Semester: II		
CONSTITUTION OF INDIA, PROFESSIONAL ETHICS AND CYBER LAW (Theory)		
Course Code: MVJ22ICOK27		**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 technograts 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	
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	
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	
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 it's consequences. **Constitutional Special Provisions:** Special Constitutional Provisions for SC & ST, OBC, Special Provision for Women, Children & Backward Classes.	**3Hrs**
UNIT-IV	
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	
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, 19th/20th 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: II		
SCIENTIFIC FOUNDATIONS OF HEALTH (Theory)		
Course Code: MVJ22SFHK28		**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	
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	
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	
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	
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	
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