MOOGAMBIGAI CHARITABLE AND EDUCATIONAL TRUST

Rajarajeswari College of Engineering

(An Autonomous Institution Under Visvesvaraya Technological University, Belagavi)
#14, Ramohalli Cross, Kumbalagodu, Mysore Road, Bengaluru - 560074

UG (B.E) Scheme
2024-25

II Semester – Chemistry Cycle

**Engineering Science Courses (ESC) - I/II**						**Emerging Technology Courses (ETC) - I/II**					
Sl. No	**Course Code**	**Name of the Course**	**L**	**T**	**P**	**Sl. No**	**Course Code**	**Name of the Course**	**L**	**T**	**P**
1	B24ESCK141/241	Introduction of Civil Engineering	3	0	0	1	B24ETCK151/251	Smart Materials and Systems	3	0	0
2	B24ESCK142/242	Introduction to Electrical Engineering	3	0	0	2	B24ETCK152/252	Concepts of Green Buildings	3	0	0
3	B24ESCK143/243	Introduction to Electronics	3	0	0	3	B24ETCK153/253	Introduction to sustainable Engineering	3	0	0
4	B24ESCK144/244	Introduction to Mechanical Engineering	3	0	0	4	B24ETCK154/254	Renewable Energy Sources	3	0	0
5	B24ESCK145/245	Introduction to C Programming	2	0	2	5	B24ETCK155/255	Waste Management	3	0	0
						6	B24ETCK156/256	Introduction to IoT	3	0	0
						7	B24ETCK157/257	Introduction to Embedded Systems	3	0	0
						8	B24ETCK158/258	Introduction to Cyber Security	3	0	0

**Programming Language Course (PLC) - I/II**					
Sl. No	**Course Code**	**Name of the Course**	**L**	**T**	**P**
1	B24PLCK151/251	Introduction to web programming	2	0	2
2	B24PLCK152/252	Introduction to Python programming	2	0	2
3	B24PLCK153/253	Basics of Java programming	2	0	2
4	B24PLCK154/254	Programming with C++	2	0	2

Example: B24MACS101

B	24	MA	CS	1	01
Bachelor Degree	Scheme	Course Code	Stream	Semester	Course Serial No

Example: B24PWSK206

B	24	PWS	K	2	06
Bachelor Degree	Scheme	Course Code	Common Course	Semester	Course Serial No

Dean-Academics

Principal

Name of the branch: CSE, CSD   Stream: CSE   Sem : II   Academic Year: 2024-25   Group: Chemistry

S. No	Course Category and Course Code		Course Title	TD / PSB	Teaching Hours / Week			Credits	Duration in Hours	Examination			SDA
					Lecture	Tutorial	Practical			CIE Marks	SEE Marks	Total Marks	
					L	T	P						
1.	ASC(IC)	B24MACS201	Mathematics - II for CS	Maths	2	2	2	4	3	50	50	100	
2.	ASC(IC)	B24CHCS202	Applied Chemistry for CS	Chemistry	2	2	2	4	3	50	50	100	
3.	ESC	B24CEDK203	Computer Aided Engineering Drawing	Civil/ME	2	0	2	3	3	50	50	100	
4.	ESC-II	B24ESCK243	Introduction to Electronics	ECE	3	0	0	3	3	50	50	100	
5.	PLC-II	B24PLCK252	Introduction to Python programming	Any Dept.	2	0	2	3	3	50	50	100	
6.	AEC	B24PWSK206	Professional writing Skills	Humanities	1	0	0	1	1	50	50	100	
7.	HSMC	B24HSKK207/ B24HBKK207	Samskrutika Kannada/ Balake Kannada	Humanities	1	0	0	1	1	50	50	100	
8.	AEC/SDC	B24SFHK208	Scientific Foundations of Health	Any Dept.	1	0	0	1	1	50	50	100	
				TOTAL	14	04	08	20		400	400	800	

SDA: Skill Development Activity, TD/PSB: Teaching department/Paper setting board, ASC: Applied Science Course, ESC: Engineering Science Course, ETC: Emerging Technology Course, AEC: Ability Enhancement Course, HSMC: Humanities and Social Science and Management Course, SDC: Skill Development Course, CIE: Continuous Internal Evaluation, SEE: Semester End Examination

Dean-Academics

DEAN ACADEMICS
Rajarajeswari College of Engineering
Bengaluru - 560 074.

Principal
Principal
RAJARAJESWARI
COLLEGE OF ENGINEERING
Ramohalli Cross, Bengaluru-74

Name of the branch: AIML, CSE(IC)   Stream: CSE   Sem : II Academic Year: 2024-25   Group:Chemistry

S.No	Course and Course Code		Course Title	TD / PSB	Teaching Hours / Week				Examination				SDA
					Theory Lecture	Tutorial	Practical	Credits	Duration in Hours	CIE Marks	SEE Marks	Total Marks	
					L	T	P						
1.	ASC(IC)	B24MACS201	Mathematics - II for CS	Maths	2	2	2	4	3	50	50	100	
2.	ASC(IC)	B24CHCS202	Applied Chemistry for CS	Chemistry	2	2	2	4	3	50	50	100	
3.	ESC	B24CEDK203	Computer Aided Engineering Drawing	Civil/ME	2	0	2	3	3	50	50	100	
4.	ESC-II	B24ESCK242	Introduction to Electrical Engineering	EEE	3	0	0	3	3	50	50	100	
5.	PLC-II	B24PLCK252	Introduction to Python programming	Any Dept.	2	0	2	3	3	50	50	100	
6.	AEC	B24PWSK206	Professional writing Skills	Humanities	1	0	0	1	1	50	50	100	
7.	HSMC	B24HSKK207/ B24HBKK207	Samskrutika Kannada/ Balake Kannada	Humanities	1	0	0	1	1	50	50	100	
8.	AEC/SDC	B24SFHK208	Scientific Foundations of Health	Any Dept.	1	0	0	1	1	50	50	100	
				TOTAL	14	04	08	20		400	400	800	

SDA: Skill Development Activity, TD/PSB: Teaching department/Paper setting board, ASC: Applied Science Course, ESC: Engineering Science Course, ETC: Emerging Technology Course, AEC: Ability Enhancement Course, HSMC: Humanities and Social Science and Management Course, SDC: Skill Development Course, CIE: Continuous Internal Evaluation, SEE: Semester End Examination

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UG (B.E) Syllabus
2024-25

II Semester – Chemistry Cycle

MOOGAMBIGAI CHARITABLE AND EDUCATIONAL TRUST

Rajarajeswari College of Engineering

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CONTENTS OF SYLLABUS

II Semester – Chemistry Cycle

MOOGAMBIGAI CHARITABLE AND EDUCATIONAL TRUST

Rajarajeswari College of Engineering

(An Autonomous Institution Under Visvesvaraya Technological University, Belagavi)
#14, Ramohalli Cross, Kumbalagodu, Mysore Road, Bengaluru - 560074

UG (B.E) Syllabus
2024-25

II Semester – Chemistry Cycle

Computer Science and Engineering
(CSE)
Computer Science and Design
(CSD)

SEMESTER II					
Mathematics-II for CS					
Course Code	:	B24MACS201	CIE	:	50 Marks
Teaching Hours L:T: P	:	2:2:2	SEE	:	50 Marks
Total Hours	:	45(T) + 15(P)	Total	:	100 Marks
Credits	:	4	SEE Duration	:	3 Hrs.

Course Objectives	
1	Familiarize the importance of Integral calculus
2	Familiarize the fundamentals of Vector calculus
3	Analyze engineering problems applying Ordinary Differential Equations.
4	Develop the knowledge of numerical methods and apply them to solve algebraic and Transcendental equations.
5	Develop the knowledge of numerical methods and apply them to solve differential equations.

Module-1: Integral Calculus	**9 hrs.**
Evaluation of double and triple integrals, evaluation of double integrals by changing of order of integration, changing into polar coordinates. Applications to find Area and Volume by double integration, Problems. Beta and Gamma functions: Definitions, properties, relation between Beta and Gamma functions. Problems. **Self-Study:** Centre of gravity, Duplication formula. **Applications:** Antenna and wave propagation, Calculation of optimum value in various geometries. Analysis of probabilistic models.	
Module-2: Vector Calculus	**9 hrs.**
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: Vector Space & Linear transformations	**9 hrs.**
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:**AnglesandProjections.Rotation,Reflection,ContractionandExpansion **Applications:** Image processing, AI & ML, Graphs and networks, Computer graphics.	
Module-4: Numerical Methods-I	**9 hrs.**
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. Numerical integration: Simpson's $(1/3)rd$ & $(3/8)th$ rule, Weddle's rule (without proof). Problems. **Self-Study:** Trapezoidal rule, Bisection method, Lagrange's inverse Interpolation, Numerical differentiation (All formulae without proof). Problems. **Applications:** Estimating the approximate roots, extremum values, Area, volume, and surface area. Errors in finite precision.	
Module 5: Numerical Methods-II	**9 hrs.**
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 method, Adams Bashforth method (No derivations of formulae)Problems. **Self-Study:** Newton's core formula. **Applications:** Estimating the approximate solutions of ODE.	

List of Laboratory experiments (2 hours/week per batch) 10 lab sessions + 1 repetition class + 1 Lab Assessment

1	Program to compute area, surface area, volume and center of gravity
2	Evaluation of improper integrals
3	Finding gradient, divergent, curl and their geometrical interpretation
4	Computation of basis and dimension for a vector space and Graphical representation of linear transformation
5	Computing the inner product and orthogonality.
6	Solution of algebraic and transcendental equations by Ramanujan's, Regula-Falsi and Newton-Raphson method
7	Interpolation/Extrapolation using Newton's forward and backward difference formula
8	Computation of area under the curve using Trapezoidal, Simpson's $(1/3)rd$ & $(3/8)th$ 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.

Suggested software's: Mathematica/Matlab/Python/Scilab

Course Outcomes: At the end of the course, the students will be able to	
CO1	Apply the concept of change of order of integration and variables to evaluate Multiple Integrals and the 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 an analyzing the discrete data and solving the Physical and engineering problems.
CO5	Apply the knowledge of numerical methods in analyzing the solution of first order differential equations.

Text Books	
1	B.S.Grewal:"Higher Engineering Mathematics", Khanna publishers,44th Ed.2018
2	E.Kreyszig:"Advanced Engineering Mathematics", John Wiley &Sons, 10th Ed.(Reprint),2016
Reference Text Books	
1	V. Ramana: "Higher Engineering Mathematics", McGraw-Hill Education,11th Edition.
2	Gupta C.B, Sing S.R and Mukesh Kumar: "Engineering Mathematics for Semester I and II", McGraw (India) Pvt. Ltd, 2015

Web links and Video lectures (e-Resources)
1. https://nptel.ac.in/courses/122106025
2. VTUEDUSATPROGRAMME –20
3. http://www.class-central.com/subject/math(MOOCs)

CIE Evaluation

Assessment Details both (CIE and SEE)

The weightage of continuous Internal Evaluation (CIE) is 50% and for the Semester End Examination (SEE) is 50%. The minimum passing mark for the CIE is 40% of maximum marks (20 marks out of 50). The minimum passing mark for SEE is 35% of 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 course. Student has to secure a minimum 40% (40 marks out of 100) in the total of the CIE and SEE together.

The CIE marks for the theory component of the **Integrated Course (IC)** shall be 25 marks and for the laboratory component 25 marks

CIE for the theory component of IC:
1. Three tests each of 50 marks, after the completion of the syllabus 40%, 70% and 100% respectively.
2. Average of best two internal assessment tests each of 50 marks, scale down to 30 marks.
3. Any two assessment methods as per regulations i.e. Two assignments / Two Quizzes/ Weekly test / project work for (20+20) marks, scaled down to 20 marks.
4. Total marks scored (30+20 = 50 marks) scaled down to **25**.

CIE for the Practical component of IC:
1. On completion of every experiment / program in the laboratory, the students shall be evaluated and marks shall be awarded on the same day.
2. Each experiment is evaluated for 10 marks and scaled down to **5 marks**
3. Laboratory test at the end of the 15th week of the semester / after completion of all the experiments shall be conducted for **50 marks** and scaled down to **20 marks.**
4. Total marks scored for lab component: 05+20= **25 marks**.
5. The minimum marks to be secured in CIE to appear for SEE shall be 10(40% of maximum marks 25) in the theory and 10(40% of Maximum marks 25) in the practical.
6. The laboratory component of the **integrated course** shall be CIE only. However, in SEE, the questions from the practical component shall be included.
7. The maximum of 05 questions is to be set from the practical component and the total marks of all questions should not be more than 25 marks.

Theory				
IA Test	Exam conducted for	Scaled down to	Average of best two tests	Total
IA-1	50	30		
IA-2	50	30	30	
IA-3	50	30		50/2=25
Two Assignments	2X10=20	10	10	
Two Quizzes	2X10=20	10	10	

LAB			
Continuous performance and record writing	Each experiments evaluated for 10 marks	Scaled down to 05 marks	5+20=25
Internal Test + Viva voce	Exam conducted for 50 Marks	Scaled down to 20 marks	

Semester End Examination (SEE)

1. The question paper shall be set for 100 marks and duration of SEE is 3 hours.
2. The question paper will have two parts: Part –A and Part – B
3. **Part - A** should contain minimum **Two or Four** quiz questions from each module of   02 marks/ 01 mark each. **Part - A is Compulsory**and carries 20 Marks.
4. **Part-B**contains two questions of 16 marks (with minimum of 3 sub questions) from each module with internal choice. Students should answer five full questions, selecting one full question from each module.
5. Students have to answer for 100 marks andmarks scored out of 100 shall beproportionally reduced to 50 marks.
6. Question papers to be set as per the Blooms Taxonomy levels.

Rubrics for Semester End Examination (SEE)		
Q. No	CONTENTS	MARKS
PART - A		
1	Two or Four Quiz questions from each module of 2 marks / 1 mark	20
PART – B (Minimum 3 subdivisions only)		
2 or 3	Module : 1	16
4 or 5	Module : 2	16
6 or 7	Module : 3	16
8 or 9	Module : 4	16
10 or 11	Module : 5	16
	TOTAL	100

CO-PO Mapping

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

SEMESTER I/II				
Applied Chemistry for CS				
Category: ASC				
Stream: **CSE** (Common to all CSE allied branches)				
(Integrated)				
Course Code	:	**B24CHCS102/202**	CIE	:	50 Marks
Teaching Hours L : T : P	:	2:2:2	SEE	:	50 Marks
Total Hours	:	45 (T) + 15(P)	Total	:	100 Marks
Credits		4	SEE Duration	:	3 Hrs

Course Objectives
• To impart the knowledge of Chemistry involved in Electrochemical cells,
• Corrosion and its control; Conventional, electrochemical and renewable sources of energy
• Polymers; memory and display systems; Water treatment; sensors; e-waste management;
• Nanomaterials and Instrumental methods of analysis

Module – 1 **Electrochemistry: Electrode Systems and Corrosion**	**No.of Hrs**
ELECTRODES AND CELLS – Introduction- Classification of cells - primary, secondary and concentration cells; Reference electrodes - Calomel electrode; Ion-selective electrodes - Glass electrode. Determination of pH using glass electrode, numerical on concentration cells. **CORROSION** - Definition, Electrochemical theory of corrosion, Types of corrosion - differential metal, differential aeration; Corrosion Penetration Rate (CPR) , numerical. Corrosion control: Metal coating-Galvanization,Inorganic coatings – anodizing.Cathodic protection – Sacrificial anode, Metal finishing - Introduction, technological importance; Electroless plating: Introduction, Electroless plating of copper (PCB).	9

Module – 2 **Energy: Sources, Conversion and Storage**	**No.of Hrs**
Chemical fuels : Introduction, Calorific value - definition, gross and net calorific values; Determination of calorific value of a solid / liquid fuel using Bomb calorimeter and numerical on calorific value; Petroleum cracking - fluidized bed catalytic cracking; Octane number. **Sustainable energy sources**: Hydrogen as a fuel - advantages, production and storage.Production of Biodiesel. Solar cells - Construction and working of Si based PV cell, advantages. Quantum Dot Sensitized Solar Cells (QDSSC's) - Principle, Properties and Applications. **Electrochemical Energy Systems**: Introduction to batteries, Classification of batteries - primary and secondary batteries; construction, working and applications of Lithium ion batteries.	9

Module – 3 **Polymers for Engineering Applications**	**No.of Hrs**
Polymers - Introduction, Molecular weight - number average and weight average molecular weight, Polydispersion index, numerical problems;; **Plastics** - Definition of resins and plastics; Synthesis, properties and applications of PMMA; **Elastomers** - Synthesis, properties and application of butyl rubber; **Adhesives**: Synthesis, properties and applications of epoxy resin. **Polymer composites** - Composites as structural material; Synthesis and applications of Kevlar; **Biodegradable polymers** - Introduction, Lactic acid - synthesis, uses	9

Module – 4 **Materials for Memory & Display System**	**No.of Hrs**
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	9

materials used in optoelectronic devices. Liquid crystals (LC's) - Introduction, classification. Properties and application of Liquid Crystal. 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). Self-learning: Properties and functions of Silicon(Si),Germanium(Ge),Copper(Cu), Aluminium(Al),andBrominated flame retardants in computers.		
Module – 5 **Sensors, Nantochemistry & E-Waste Management**	**No.of Hrs**	

SENSORS: Introduction, working, principle and applications of Electrochemical sensors. Electrochemical gas sensors for SOx and NOx.
  NanoChemistry: Introduction, Synthesis of nanoparticles by using bottom Up method-Sol Gel,precipitation method.
  Nanomaterials: properties and engineering application of carbon nanotubes and graphene.
  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.Extraction of gold from E-waste.
	9	

Course Outcomes: At the end of the course, the students will be able to	
CO1	Understand and apply the principles of chemistry involved in water treatment, corrosion, energy sources, polymers, nanomaterials, phase equilibria, alloys, ceramics and instrumental methods of analysis.
CO2	Analyse the Engineering problems and draw meaningful inferences through applied chemistry.
CO3	Implement sustainable solutions through concepts of Applied Chemistry in the field of Materials, Energy and Environment
CO4	Engage in self-study and make an effective oral presentation on contribution of Chemistry to society
CO5	Apply the knowledge of chemistry to investigate engineering materials by volumetric and instrumental methods and analyze, interpret the data to assess and address the issues of Environmental Pollution

Text Books	
1	Uppal M.M, Jain and Jain. Engineering Chemistry, Khanna Publishers, 45th Edition, 2020.
2	P.C. Jain and Monica Jain, A text Book of Engineering Chemistry, Dhanpat Rai Publications, New Delhi, 20th Edition, 2020

Reference Text Books	
1	S S Dara -A Text book of Engineering Chemistry, S Chand & Company Ltd., 15th Edition, 2020
2	B. S. Jai Prakash, R. Venugopal, Sivakumaraiah & Pushpa Iyengar. "Chemistry for Engineering Students", Shubash Publications, Bangalore. 10th Edition, 2020
3	F. W. Billmeyer, Text Book of Polymer Science, John Wiley & Sons, 15th Edition, 2020
4	B. K. Sharma- A text book of Industrial Chemistry. 15th Edition, 2020.
5	G.A. Ozin & A.C. Arsenault, "Nanotechnology A Chemical Approach to Nanomaterials". RSC Publishing, 5th Edition, 2020
6	Wiley Engineering Chemistry, Wiley India Pvt. Ltd. New Delhi, 2013- 2nd Edition

Web links and Video lectures (e-Resources)
1. https://www.youtube.com/watch?v=faESCxAWR9k
2. https://www.youtube.com/watch?v=TBqXMWaxZYM&list=PLyhmwFtznRhuz8L1bb 3X- 9IbHrDMjHWWh
3. https://www.youtube.com/watch?v=j5Hml6KN4TI
4. https://www.youtube.com/watch?v=X9GHBdyYcyo
5. https://www.youtube.com/watch?v=1xWBPZnEJk8
6. https://www.youtube.com/watch?v=wRAo-M8xBHM.

PRACTICAL MODULE

A – Demonstration (any two) offline/virtual:

A1. Chemical Structure drawing using software: ChemDraw or ACD/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 pKa of vinegar using pH sensor (Glass electrode)

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 flame photometry
C5. Determination of Chemical Oxygen Demand (COD) of 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 photovoltaic cell.
D3. Design an experiment to Identify the presence of proteins in given sample.
D4. Searching suitable PDB file and target for molecular docking

CIE Evaluation

Assessment Details both (CIE and SEE)

The weightage of continuous Internal Evaluation (CIE) is 50% and for the Semester End Examination (SEE) is 50%. The minimum passing mark for the CIE is 40% of maximum marks (20 marks out of 50). The minimum passing mark for SEE is 35% of 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 course. Student has to secure a minimum 40% (40 marks out of 100) in the total of the CIE and SEE together.

The CIE marks for the theory component of the **Integrated Course (IC)** shall be 25 marks and for the laboratory component 25 marks

CIE for the theory component of IC:

1. Three tests each of 50 marks, after the completion of the syllabus 40%, 70% and 100% respectively.
2. Average of best two internal assessment tests each of 50 marks, scale down to 30 marks.
3. Any two assessment methods as per regulations i.e. Two assignments / Two Quizzes/ Weekly test / project work for (20+20) marks, scaled down to 20 marks.
4. Total marks scored (30+20 = 50 marks) scaled down to **25**.

CIE for the Practical component of IC:

1. On completion of every experiment / program in the laboratory, the students shall be evaluated and marks shall be awarded on the same day.
2. Each experiment is evaluated for 10 marks and scaled down to **5 marks**
3. Laboratory test at the end of the 15th week of the semester / after completion of all the experiments shall be conducted for **50 marks** and scaled down to **20 marks.**
4. Total marks scored for lab component: 05+20= **25 marks**.
5. The minimum marks to be secured in CIE to appear for SEE shall be 10(40% of maximum marks 25) in the theory and 10(40% of Maximum marks 25) in the practical.
6. The laboratory component of the **integrated course** shall be CIE only. However, in SEE, the questions from the practical component shall be included.
7. The maximum of 05 questions is to be set from the practical component and the total marks of all questions should not be more than 25 marks.

Theory				
IA Test	Exam conducted for	Scaled down to	Average of best two tests	Total
IA-1	50	30	30	50/2=25
IA-2	50	30		
IA-3	50	30		
Two Assignments	2X10=20	10	10	
Two Quizzes	2X10=20	10	10	

LAB			
Continuous performance and record writing	Each experiments evaluated for 10 marks	Scaled down to 05 marks	5+20=25
Internal Test + Viva voce	Exam conducted for 50 Marks	Scaled down to 20 marks	

Semester End Examination (SEE)

1. The question paper shall be set for 100 marks and duration of SEE is 3 hours.
2. The question paper will have two parts: Part –A and Part – B
3. **Part - A** should contain minimum **Two or Four** quiz questions from each module of 02 marks / 01 mark each. **Part - A is Compulsory** and carries 20 Marks.
4. **Part - B** contains two questions of 16 marks (with minimum of 3 sub questions) from each module with internal choice. Students should answer five full questions, selecting one full question from each module.
5. Students have to answer for 100 marks and marks scored out of 100 shall be proportionally reduced to 50 marks.
6. Question papers to be set as per the Blooms Taxonomy levels.

Rubrics for Semester End Examination (SEE)		
Q. No	CONTENTS	MARKS
	PART - A	
1	Two or Four Quiz questions from each module of 2 marks / 1 mark	20
	PART – B	
	(Minimum 3 subdivisions only)	
2 or 3	Module : 1	16
4 or 5	Module : 2	16
6 or 7	Module : 3	16
8 or 9	Module : 4	16
10 or 11	Module : 5	16
	TOTAL	100

CO-PO Mapping

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

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

Semester I/II					
Computer Aided Engineering Drawing Category: ESC (Common to all branches) (Practical)					
Course Code	:	**B24CEDK103/203**	CIE	:	50 Marks
Teaching Hours L : T : P	:	2:0:2	SEE	:	50 Marks
Total Hours	:	45	Total	:	100 Marks
Credits		03	SEE Duration	:	3 Hrs

Course Objectives	
1	To understand the basic principles and conventions of engineering drawing
2	To use drawing as a communication mode
3	To generate pictorial views using CAD software
4	To understand the development of surfaces
5	To visualize engineering components

Module - 1	**No. of Hrs**
Introduction: 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 all quadrants. Orthographic projections of lines (Placed in First quadrant only). Orthographic projections of planes similar to Triangle, Square, Rectangle, Pentagon, Hexagon, and Circular laminas **(Placed in First Quadrant only using Change of Position Method).**	**9 Hrs**
Module - 2	**No. of Hrs**
Orthographic Projection of Solids: Orthographic projection of right regular solids Prisms (Square, Pentagon, Hexagon) & Pyramids (Square, Pentagon, Hexagon), Cones, Cubes & Tetrahedron. **(Only Solids Resting on HP using Change of Position Method)**	**9 Hrs**
Module - 3	**No. of Hrs**
Isometric Projections: Isometric scale, Isometric projection of hexahedron (cube), right regular prisms, pyramids, cylinders, cones and spheres. Isometric projection of combination of two and three simple solids. **(Conversion of simple isometric drawings into orthographic views)**	**9 Hrs**

Module - 4	No. of Hrs
Development of Lateral Surfaces of Solids: Development of lateral surfaces of right regular prisms, cylinders, pyramids and cones resting with base on HP only. Problems on applications of development of lateral surfaces ex: Funnels Development of lateral surfaces of their frustums and truncations.	**9 Hrs**

Module - 5	No. of Hrs
Multidisciplinary Applications & Practice using CAD software (*For CIE Only*): **Free hand Sketching:** True free hand, Guided Free hand, Roads, Buildings, Utensils, Hand tools & Furniture's etc. **Drawing Simple Mechanisms: (Only for ME with allied branches)** Bicycles, Tricycles, Gear trains, Ratchets, two-wheeler cart & Four-wheeler carts to dimensions etc. **Electric Wiring and lighting diagrams: (Only for EEE with allied branches)** Automatic fire alarm, Call bell system, UPS system, Basic power distribution system. **Basic Building Drawing: (Only for Civil with allied branches)** Architectural floor plan, basic foundation drawing, steel structures-frames, bridges, trusses. **Flow charts drawings: (Only for CSE with allied branches)** Types of flow charts like Process Flowchart, Workflow Diagram, Swimlane Flowchart, Data Flow Diagram, System Flowchart, and Decision Flowchart. **Electronics Engineering Drawings: (Only for ECE with allied branches)** Simple electronics circuit drawings, practice on layers concept.	**9 Hrs**

Course Outcomes: At the end of the course, the students will be able to	
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 through its graphical representation.

Text Books	
1.	K. R. Gopalakrishna, & Sudhir Gopalakrishna: Textbook of Computer Aided Engineering Drawing, 39th Edition, Subash Stores, Bangalore, 2017.
2.	Bhatt, N.D., Engineering Drawing: Plane and Solid Geometry, 53rd Edition, Charotar Publishing House Pvt. Limited, 2019.

Reference Text Books
S. N. Lal & T Madhusudhan, Engineering Visualization, 1st Edition, Cengage, Publication.

Parthasarathy N. S., Vela Murali, Engineering Drawing, Oxford University Press,2015.

Bhattacharya S. K., Electrical Engineering Drawing, New Age International publishers, second edition 1998, reprint, 2005.

Web links and Video lectures (e-Resources)
1. https://youtu.be/GFu1yqgB5g0
2. https://youtu.be/p62LPzFqGQw

CONTINUOUS INTERNAL EVALUATION (CIE)

Assessment Details (both CIE and SEE):

1) The weightage of Continuous Internal Evaluation (CIE) is 50% and for Semester End Exam (SEE) is 50%.

2) 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).

3) 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.
- IA Test- 3 covering all the modules is to be conducted for Max. Marks of 100 and evaluation to be based SEE pattern, and the same is to be scaled down to 15 marks.
- The final CIE = Class work marks + Test marks.

RUBRIC FOR THE CONTINUOUS INTERNAL EVALUATION (CIE)				
Particulars	**Marks**	**Evaluation Weightage in marks**	**Reduced to**	**Total**
IA-1	**50**	Best of Two Internals	**10**	**25**
IA-2	**50**			
IA-3	**50**	Lab Mock Exam	**15**	
Sketch Book	**20**	Sketch Book + Assignments	**-**	**25**
Assignments	**5**			
			Total	**50**

Semester End Examination (SEE)

1) SEE shall be conducted and evaluated for maximum marks 100. Marks obtained shall be accounted for SEE final marks, reducing it by 50%

2) 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 Text Books.**

3) **Related to Module-1:** One full question can be set either from **"points & lines" or "planes".**

4) Evaluation shall be carried jointly by both the examiners.

5) Scheme of Evaluation: To be defined by the examiners jointly and the same shall be submitted to the university along with question paper.

6) 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.

RUBRIC FOR THE SEMESTER END EXAMINATION (SEE)			
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 (Reduced to 50 Marks)**	

CO-PO Mapping

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO-1	3	-	-	-	2	-	-	-	-	3	-	-
CO-2	3	-	-	-	3	-	-	-	-	3	-	-
CO-3	3	-	-	-	3	-	-	-	-	3	-	-
CO-4	3	-	-	-	3	-	-	-	-	3	-	-
CO-5	3	-	-	-	2	-	-	-	-	3	-	-

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

Semester I/II				
Introduction to Electronics				
Category: ESC- I/II				
(Common to All Branches except ECE)				
(Theory)				
Course Code	:	**B24ESCK143/243**	CIE	:	50 Marks
Teaching Hours/Week (L:T:P: S)	:	3:0:0	SEE	:	50 Marks
Total Hours	:	45	Total	:	100 Marks
Credits	:	3	SEE Duration	:	3 Hrs

Course Objectives	
1	To Explain the operation of Semiconductor diode, Zener diode and their applications.
2	To Explain the Transistor operation and Different configurations, working and construction of FET and MOSFET.
3	To Explain the operation of linear Op-amps and its applications
4	To Explain the Basic Logic gates, circuits and their optimization.
5	To Explain the Principles of Communication system

Module - 1	**No. of Hrs**
Diode Applications - Load line analysis, series- diode configuration. Sinusoidal inputs - half wave rectification, Full wave Rectification, Zener diodes, voltage multiplier Circuits . T1: 2.2,2.3,2.6,2.7,2.11, 2.12	9
Module - 2	**No. of Hrs**
Bipolar junction transistor - Transistor operation, common base configuration, common emitter configuration, common collector configuration. Junction field effect transistor - construction and characteristics of JFET, Transfer Characteristics. MOSFET- Depletion type MOSFET, Enhancement type MOSFET T1: 3-3, 304, 305, 306, 6-2, 6-3, 6-7, 6-8	9
Module - 3	**No. of Hrs**
Operational amplifier –Operational amplifier basics, practical Op-Amp circuits, Op-Amp specification –DC offset parameter, frequency parameter, Differential and common mode operation. Practical Op-Amp circuits– Inverting amplifier, non-inverting amplifier, Unity follower, Summingamplifier, Integrator, Differentiator. T1:10.4, 10.5, 10.6, 10.7, 10.9	9
Module– 4	**No. of Hrs**
Boolean Algebra and Logic Circuits: Binary numbers, Number Base Conversion, octal &Hexa Decimal Numbers, Complements, Basic definitions, Axiomatic Definition of Boolean Algebra, Basic Theorems and Properties of Boolean Algebra, Boolean Functions, Canonical and Standard Forms, Other Logic Operations, Digital Logic Gates (Text 2: 1.2, 1.3, 1.4, 1.5,2.1, 2.2, 2.3, 2.4, 2.5, 2.6, 2.7) Combinational logic: Introduction, Design procedure, Adders- Half adder, Full adder (Text 2:4.1, 4.2, 4.3)	9
Module– 5	**No. of Hrs**
Elements of a Communication system, Need for Modulation, Amplitude Modulation (Am) Techniques, Frequency Modulation, Phase modulation, Comparison of FM & PM, Comparison of FM and AM. T3: 1.2, 1.3, 3.2.1, 4.1.1, 4.1.2, 4.1.3, 4.2.6, 6.2.1, 6.2.2	9

Course Outcomes: At the end of the course, the students will be able to	
CO1	Develop the basic knowledge on construction and characteristics of semiconductor devices.
CO2	Summarize the basic concept of small scale circuits using BJT,JFET,MOSFET scale circuits
CO3	Apply the knowledge on various applications of operational amplifiers
CO4	Understand the concepts of Boolean algebra and Logic circuits
CO5	Illustrate the outline of Communication system.

Text Books	
1	Robert L Boylestad and Louis Nashelsky, Electronic Devices and Circuit Theory,11th Edition, Pearson Education, 2013, ISBN: 978-93-325-4260-0.
2	M. Morris Mano, Digital Logic and Computer Design, PHI Learning, 2008 ISBN-978-81-203 0417-84.
3	George Kenndy, Electronics communication systems, 5thEdition,TataMcgrahill.
Reference Books	
1	David A Bell, Electronic Devices and Circuits,5th Edition, Oxford, 2016 2.
2	Ramakanth A Gayakwad, Op-amps and Linear Integrated Circuits, Pearson Education, 4th Edition

Web links and Video lectures (e-Resources)
1. https://nptel.ac.in/courses/122106025 2. https://nptel.ac.in/courses/108105132 3. https://nptel.ac.in/courses/117104072

CIE Evaluation

Assessment Details both (CIE and SEE)

The weightage of continuous Internal Evaluation (CIE) is 50% and for the Semester End Examination (SEE) is 50%. The minimum passing mark for the CIE is 40% of maximum marks (20 marks out of 50). The minimum passing mark for SEE is 35% of 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 course. Student has to secure a minimum 40% (40 marks out of 100) in the total of the CIE and SEE together.

CIE for the theory:

1. Three tests each of 50 marks, after the completion of the syllabus 40%, 70% and 100% respectively.
2. Average of best two internal assessment tests each of 50 marks, scale down to 30 marks.
3. Any two assessment methods as per regulations i.e. Two assignments / Two Quizzes/ Weekly test / project work for 40 marks, scaled down to 20 marks.
4. Total marks scored (30+20 = 50 marks).
5. The minimum passing mark for the CIE is 40% of maximum marks (20 marks out of 50).

Theory				
IA Test	**Exam conducted for**	**Scaled down to**	**Average of best two tests**	**Total**
IA-1	**50**	**30**	**30**	**30+10+10=50**
IA-2	**50**	**30**		
IA-3	**50**	**30**		
Two Assignments	**2X10=20**	**10**	**10**	
Two Quizzes	**2X10=20**	**10**	**10**	

Semester End Examination (SEE)

1. The question paper shall be set for 100 marks and duration of SEE is 3 hours.
2. The question paper will have two parts: Part –A and Part – B
3. **Part - A** should contain minimum **Two or Four** quiz questions from each module of 02 marks / 01 mark each. **Part - A is Compulsory** and carries 20 Marks.
4. **Part - B** contains two questions of 16 marks (with minimum of 3 sub questions) from each module with internal choice. Students should answer five full questions, selecting one full question from each module.
5. Students have to answer for 100 marks and marks scored out of 100 shall be proportionally reduced to 50 marks.
6. Question papers to be set as per the Blooms Taxonomy levels.

Rubrics for Semester End Examination (SEE)		
Q. No	**CONTENTS**	**MARKS**
	PART - A	
1	Two or Four Quiz questions from each module of 2 marks / 1 mark	20
	PART – B (Minimum 3 subdivisions only)	
2 or 3	Module : 1	16
4 or 5	Module : 2	16
6 or 7	Module : 3	16
8 or 9	Module : 4	16
10 or 11	Module : 5	16
	TOTAL	100

CO-PO Mapping

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

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

Semester I/II				
Introduction to Python Programming				
Category: PLC- I/II				
(Common to All Branches)				
(Integrated)				
Course Code	:	**B24PLCK152/252**	CIE	:	50 Marks
Teaching Hours L : T : P	:	2:0:2	SEE	:	50 Marks
Total Hours	:	45(T) + 15(P)	Total	:	100 Marks
Credits		3	SEE Duration	:	3 Hrs

Course Objectives	
1.	Learn the syntax and semantics of the Python programming language.
2.	Readily use the Python functions to facilitate code reuse and manipulate strings.
3.	Apply various structuring the data using lists, tuples
4.	Understand the need for working with various documents like Excel, PDF, Word and Others.
5.	Understand the Object-Oriented Programming concepts in Python.

Module - 1	No. of Hrs
Python Basics: The Python programming language, Program, Debugging, Variables, Expressions, and Statements, Entering expressions into the Interactive Shell, Your first program, Dissecting your program. **Flow control:** Boolean Values, Comparison Operators, Boolean Operators, Mixing Boolean and Comparison Operators, Elements of Flow Control, Program Execution, Flow Control Statements, Importing Modules, Ending a Program Early with sys. exit (). **Textbook 1: Chapters 1 – 2 Textbook 2: Chapters 1.1-1.3, Chapter 2.1-2.10**	09
Module - 2	No. of Hrs
Functions: def Statements with Parameters, Return Values, and return Statements, The None Value, Keyword Arguments, and print(), Local and Global Scope, the global Statement, Exception Handling, A Short Program: Guess the Number. **Lists:** The List Data Type, Working with Lists, Augmented Assignment Operators, Methods, Example Program: Magic 8 Ball with a List, List-like Types: Strings and Tuples, References. **Textbook 1: Chapters 3, 4**	09
Module - 3	No. of Hrs
Dictionaries and Structuring Data: The Dictionary Data Type, Pretty Printing, Using Data Structures to Model Real-World Things. **Manipulating Strings:** Working with Strings, Useful String Methods, Project: Password Locker**.** **Textbook 1: Chapters 5, 6**	09
Module - 4	No. of Hrs
Reading and Writing Files: Files and File Paths, The os.path Module, The File Reading/Writing Process, Saving Variables with the shelve Module, Saving Variables with the print.format() Function, Project: Generating Random Quiz Files, Project: Multi-clipboard. **Working with Excel Spreadsheets:** Installing the openpyxl Module, Reading Excel Documents, Writing Excel Documents. **Textbook 1: Chapters 8, 9 and 12**	09
Module - 5	No. of Hrs
Classes and objects: Programmer defined types, Attributes, Rectangles, Instances as return values, Objects are mutable, Copying,	

Classes and functions: Time, Pure functions, Modifiers. **Classes and methods:** Object-oriented features, Printing objects, Another example, A more complicated example, The init method, The str method, Operator overloading, Type-based dispatch, Polymorphism, Interface, and implementation. **Textbook 2: Chapters 15 – 17**	09

Course Outcomes: At the end of the course, the students will be able to	
CO1	Understand the fundamental programming constructs to solve basic computational problems.
CO2	Learn the flow of execution and the need for debugging to rectify program bugs proficiently.
CO3	Utilize the methods to create and manipulate the importance of data structures in problem-solving.
CO4	Know the structured and modular code using appropriate Object-Oriented Programming paradigms.
CO5	Apply the acquired skills to provide solutions to real-world problems.

Practical Component	
Sl. No.	**Experiments for Conduction**
1.	a) Develop a program to read the student details like Name, USN, and Marks in three subjects. Display the student details, total marks, and percentages with suitable messages. b) Develop a program to read the name and year of birth of a person. Display whether the person is a senior citizen or not.
2.	a) Develop a program to generate Fibonacci sequence of length (N). Read N from the console. b) Write a function to calculate the factorial of a number. Develop a program to compute binomial coefficient (Given N and R).
3.	Read N numbers from the console and create a list. Develop a program to print mean, variance, and standard deviation with suitable messages.
4.	Read a multi-digit number (as chars) from the console. Develop a program to print the frequency of each digit with a suitable message.
5.	Develop a program to print the 10 most frequently appearing words in a text file. [Hint: Use a dictionary with distinct words and their frequency of occurrences. Sort the dictionary in the reverse order offrequency and display the dictionary slice of the first 10 items]
6.	Develop a program to sort the contents of a text file and write the sorted contents into a separate text file. [Hint: Use string methods *strip(), len(),* list methods *sort(), append(),* and file methods *open(), readlines(),* and *write()*].
7.	Implement a Python program to perform the following operations on an Excel spreadsheet: • Reading the first 5 rows of all columns • Appending a new row / new column • Delete row/column • To perform aggregate functions
8.	Write a function named *DivExp* which takes TWO parameters *a, b* and returns the value of *c, where*

	c=a/b. Write suitable assertion for *a>0* in function *DivExp* and raise an exception for when *b=0*. Develop a suitable program which reads two values from the console and calls a function *DivExp*.
9.	Define a function which takes TWO objects representing complex numbers and returns new complex number with an addition of two complex numbers. Define a suitable class 'Complex' to represent the complex number. Develop a program to read *N (N >=2)* complex numbers and to compute the additionof *N* complex numbers.
10.	Develop a program that uses class Student which prompts the user to enter marks in three subjects and calculates total marks, percentage and displays the score card details. [Hint: Use list to store the marks in three subjects and total marks. Use *_init_()* method to initialize name, USN and the lists to store marks and total, Use *getMarks()* method to read marks into the list, and *display()* method to display the score card details.]

Text Books	
1.	Al Sweigart,"Automate the Boring Stuff with Python",1st Edition, No Starch Press, 2015. (Available under CC-BY-NC-SA license at https://automatetheboringstuff.com/) (Chapters 1 to 18, except 12) for lambda functions use this link: https://www.learnbyexample.org/python-lambda-function/
2.	Allen B. Downey, "Think Python: How to Think Like a Computer Scientist", 2nd Edition, Green Tea Press, 2015. (Available under CC-BY-NC license at http://greenteapress.com/thinkpython2/thinkpython2.pdf (Chapters 13, 15, 16, 17, 18) (Download pdf/html files from the above link)
Reference Text Books	
1.	Charles Dierbach, "Introduction to Computer Science Using Python", 1st Edition, Wiley India Pvt Ltd. ISBN-13: 978-8126556014.
2.	Wesley J Chun, "Core Python Applications Programming", 3rd Edition, Pearson Education India, 2015. ISBN-13: 978-9332555365.
3.	Roberto Tamassia, Michael H Goldwasser, Michael T Goodrich, "Data Structures and Algorithms in Python", 1st Edition, Wiley India Pvt Ltd, 2016. ISBN-13: 978-8126562176.
4.	Charles R. Severance, "Python for Everybody: Exploring Data Using Python 3", 1 st Edition, Shroff Publishers, 2017. ISBN: 978-9352136278.
5.	Reema Thareja, "Python Programming using problem solving approach", Oxford University press, 2017. ISBN-13: 978-0199480173.

Web links and Video lectures (e-Resources)
1. https://www.learnbyexample.org/python/
2. https://www.learnpython.org/
3. https://pythontutor.com/visualize.html#mode=edit
4. https://www.datacamp.com/tutorial/python-excel-tutorial

CIE Evaluation

Assessment Details both (CIE and SEE)

The weightage of continuous Internal Evaluation (CIE) is 50% and for the Semester End Examination (SEE) is 50%. The minimum passing mark for the CIE is 40% of maximum marks (20 marks out of 50). The minimum passing mark for SEE is 35% of 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 course. Student has to secure a minimum 40% (40 marks out of 100) in the total of the CIE and SEE together.
The CIE marks for the theory component of the **Integrated Course (IC)** shall be 25 marks and for the laboratory component 25 marks

CIE for the theory component of IC:

1. Three tests each of 50 marks, after the completion of the syllabus 40%, 70% and 100% respectively.
2. Average of best two internal assessment tests each of 50 marks, scale down to 30 marks.
3. Any two assessment methods as per regulations i.e. Two assignments / Two Quizzes/ Weekly test / project work for (20+20) marks, scaled down to 20 marks.
4. Total marks scored (30+20 = 50 marks) scaled down to **25**.

CIE for the Practical component of IC:

1. On completion of every experiment / program in the laboratory, the students shall be evaluated and marks shall be awarded on the same day.
2. Each experiment is evaluated for 10 marks and scaled down to **5 marks**
3. Laboratory test at the end of the 15th week of the semester / after completion of all the experiments shall be conducted for **50 marks** and scaled down to **20 marks.**
4. Total marks scored for lab component: 05+20= **25 marks**.
5. The minimum marks to be secured in CIE to appear for SEE shall be 10(40% of maximum marks 25) in the theory and 10(40% of Maximum marks 25) in the practical.
6. The laboratory component of the **integrated course** shall be CIE only. However, in SEE, the questions from the practical component shall be included.
7. The maximum of 05 questions is to be set from the practical component and the total marks of all questions should not be more than 25 marks.

Theory				
IA Test	Exam conducted for	Scaled down to	Average of best two tests	Total
IA-1	50	30		
IA-2	50	30	30	
IA-3	50	30		50/2=25
Two Assignments	2X10=20	10	10	
Two Quizzes	2X10=20	10	10	

LAB			
Continuous performance and record writing	Each experiments evaluated for 10 marks	Scaled down to 05 marks	5+20=25
Internal Test + Viva voce	Exam conducted for 50 Marks	Scaled down to 20 marks	

Semester End Examination (SEE)

1. The question paper shall be set for 100 marks and duration of SEE is 3 hours.
2. The question paper will have two parts: Part –A and Part – B
3. **Part - A** should contain minimum **Two or Four** quiz questions from each module of 02 marks / 01 mark each. **Part - A is Compulsory** and carries 20 Marks.
4. **Part - B** contains two questions of 16 marks (with minimum of 3 sub questions) from each module with internal choice. Students should answer five full questions, selecting one full question from each module.
5. Students have to answer for 100 marks and marks scored out of 100 shall be proportionally reduced to 50 marks.
6. Question papers to be set as per the Blooms Taxonomy levels.

Q. No	CONTENTS	MARKS
	Rubrics for Semester End Examination (SEE)	
	PART - A	
1	Two or Four Quiz questions from each module of 2 marks / 1 mark	20
	PART – B (Minimum 3 subdivisions only)	
2 or 3	Module : 1	16
4 or 5	Module : 2	16
6 or 7	Module : 3	16
8 or 9	Module : 4	16
10 or 11	Module : 5	16
	TOTAL	100

CO-PO Mapping

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

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

MOOGAMBIGAI CHARITABLE AND EDUCATIONAL TRUST

Rajarajeswari College of Engineering

(An Autonomous Institution Under Visvesvaraya Technological University, Belagavi)
#14, Ramohalli Cross, Kumbalagodu, Mysore Road, Bengaluru - 560074

UG (B.E) Syllabus
2024-25

II Semester – Chemistry Cycle

Artificial Intelligence & Machine Learning
(AIML)
CSE (IoT, Cyber Security including Blockchain Technology)
(CSE[IC])

SEMESTER II					
Mathematics-II for CS					
Course Code	:	B24MACS201	CIE	:	50 Marks
Teaching Hours L:T: P	:	2:2:2	SEE	:	50 Marks
Total Hours	:	45(T) + 15(P)	Total	:	100 Marks
Credits	:	4	SEE Duration	:	3 Hrs.

Course Objectives	
1	Familiarize the importance of Integral calculus
2	Familiarize the fundamentals of Vector calculus
3	Analyze engineering problems applying Ordinary Differential Equations.
4	Develop the knowledge of numerical methods and apply them to solve algebraic and Transcendental equations.
5	Develop the knowledge of numerical methods and apply them to solve differential equations.

Module-1: Integral Calculus	9 hrs.
Evaluation of double and triple integrals, evaluation of double integrals by changing of order of integration, changing into polar coordinates. Applications to find Area and Volume by double integration, Problems. Beta and Gamma functions: Definitions, properties, relation between Beta and Gamma functions. Problems. **Self-Study:** Centre of gravity, Duplication formula. **Applications:** Antenna and wave propagation, Calculation of optimum value in various geometries. Analysis of probabilistic models.	
Module-2: Vector Calculus	**9 hrs.**
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: Vector Space & Linear transformations	**9 hrs.**
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:** AnglesandProjections.Rotation,Reflection,ContractionandExpansion **Applications:** Image processing, AI & ML, Graphs and networks, Computer graphics.	
Module-4: Numerical Methods-I	**9 hrs.**
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. Numerical integration: Simpson's $(1/3)rd$&$(3/8)th$ rule, Weddle's rule (without proof). Problems. **Self-Study:** Trapezoidal rule, Bisection method, Lagrange's inverse Interpolation, Numerical differentiation (All formulae without proof). Problems. **Applications:** Estimating the approximate roots, extremum values, Area, volume, and surface area. Errors in finite precision.	
Module 5: Numerical Methods-II	**9 hrs.**
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 method, Adams Bashforth method (No derivations of formulae)Problems. **Self-Study:** Newton's core formula. **Applications:** Estimating the approximate solutions of ODE.	

List of Laboratory experiments (2 hours/week per batch) 10 lab sessions + 1 repetition class + 1 Lab Assessment

1	Program to compute area, surface area, volume and center of gravity
2	Evaluation of improper integrals
3	Finding gradient, divergent, curl and their geometrical interpretation
4	Computation of basis and dimension for a vector space and Graphical representation of linear transformation
5	Computing the inner product and orthogonality.
6	Solution of algebraic and transcendental equations by Ramanujan's, Regula-Falsi and Newton-Raphson method
7	Interpolation/Extrapolation using Newton's forward and backward difference formula
8	Computation of area under the curve using Trapezoidal, Simpson's $(1/3)rd$ & $(3/8)th$ 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.

Suggested software's: Mathematica/Matlab/Python/Scilab

Course Outcomes: At the end of the course, the students will be able to	
CO1	Apply the concept of change of order of integration and variables to evaluate Multiple Integrals and the 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 an analyzing the discrete data and solving the Physical and engineering problems.
CO5	Apply the knowledge of numerical methods in analyzing the solution of first order differential equations.

Text Books	
1	B.S.Grewal:"Higher Engineering Mathematics", Khanna publishers,44th Ed.2018
2	E.Kreyszig:"Advanced Engineering Mathematics", John Wiley &Sons, 10th Ed.(Reprint),2016
Reference Text Books	
1	V. Ramana: "Higher Engineering Mathematics", McGraw-Hill Education,11th Edition.
2	Gupta C.B, Sing S.R and Mukesh Kumar: "Engineering Mathematics for Semester I and II", McGraw (India) Pvt. Ltd, 2015

Web links and Video lectures (e-Resources)
1. https://nptel.ac.in/courses/122106025
2. VTUEDUSATPROGRAMME –20
3. http://www.class-central.com/subject/math(MOOCs)

CIE Evaluation

Assessment Details both (CIE and SEE)

The weightage of continuous Internal Evaluation (CIE) is 50% and for the Semester End Examination (SEE) is 50%. The minimum passing mark for the CIE is 40% of maximum marks (20 marks out of 50). The minimum passing mark for SEE is 35% of 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 course. Student has to secure a minimum 40% (40 marks out of 100) in the total of the CIE and SEE together.

The CIE marks for the theory component of the **Integrated Course (IC)** shall be 25 marks and for the laboratory component 25 marks

CIE for the theory component of IC:
1. Three tests each of 50 marks, after the completion of the syllabus 40%, 70% and 100% respectively.
2. Average of best two internal assessment tests each of 50 marks, scale down to 30 marks.
3. Any two assessment methods as per regulations i.e. Two assignments / Two Quizzes/ Weekly test / project work for (20+20) marks, scaled down to 20 marks.
4. Total marks scored (30+20 = 50 marks) scaled down to **25**.

CIE for the Practical component of IC:
1. On completion of every experiment / program in the laboratory, the students shall be evaluated and marks shall be awarded on the same day.
2. Each experiment is evaluated for 10 marks and scaled down to **5 marks**
3. Laboratory test at the end of the 15th week of the semester / after completion of all the experiments shall be conducted for **50 marks** and scaled down to **20 marks.**
4. Total marks scored for lab component: 05+20= **25 marks**.
5. The minimum marks to be secured in CIE to appear for SEE shall be 10(40% of maximum marks 25) in the theory and 10(40% of Maximum marks 25) in the practical.
6. The laboratory component of the **integrated course** shall be CIE only. However, in SEE, the questions from the practical component shall be included.
7. The maximum of 05 questions is to be set from the practical component and the total marks of all questions should not be more than 25 marks.

Theory				
IA Test	Exam conducted for	Scaled down to	Average of best two tests	Total
IA-1	50	30		
IA-2	50	30	30	
IA-3	50	30		50/2=25
Two Assignments	2X10=20	10	10	
Two Quizzes	2X10=20	10	10	

LAB			
Continuous performance and record writing	Each experiments evaluated for 10 marks	Scaled down to 05 marks	5+20=25
Internal Test + Viva voce	Exam conducted for 50 Marks	Scaled down to 20 marks	

Semester End Examination (SEE)

1. The question paper shall be set for 100 marks and duration of SEE is 3 hours.
2. The question paper will have two parts: Part –A and Part – B
3. **Part - A** should contain minimum **Two or Four** quiz questions from each module of   02 marks/ 01 mark each. **Part - A is Compulsory**and carries 20 Marks.
4. **Part-B**contains two questions of 16 marks (with minimum of 3 sub questions) from each module with internal choice. Students should answer five full questions, selecting one full question from each module.
5. Students have to answer for 100 marks andmarks scored out of 100 shall beproportionally reduced to 50 marks.
6. Question papers to be set as per the Blooms Taxonomy levels.

Q. No	CONTENTS	MARKS
	Rubrics for Semester End Examination (SEE)	
	PART - A	
1	Two or Four Quiz questions from each module of 2 marks / 1 mark	20
	PART – B (Minimum 3 subdivisions only)	
2 or 3	Module : 1	16
4 or 5	Module : 2	16
6 or 7	Module : 3	16
8 or 9	Module : 4	16
10 or 11	Module : 5	16
	TOTAL	100

CO-PO Mapping

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

SEMESTER I/II				
Applied Chemistry for CS				
Category: ASC				
Stream: **CSE** (Common to all CSE allied branches)				
(Integrated)				
Course Code	:	**B24CHCS102/202**	CIE	:	50 Marks
Teaching Hours L : T : P	:	2:2:2	SEE	:	50 Marks
Total Hours	:	45 (T) + 15(P)	Total	:	100 Marks
Credits	:	4	SEE Duration	:	3 Hrs

Course Objectives
• To impart the knowledge of Chemistry involved in Electrochemical cells,
• Corrosion and its control; Conventional, electrochemical and renewable sources of energy
• Polymers; memory and display systems; Water treatment; sensors; e-waste management;
• Nanomaterials and Instrumental methods of analysis

Module – 1 **Electrochemistry: Electrode Systems and Corrosion**	**No.of Hrs**
ELECTRODES AND CELLS – Introduction- Classification of cells - primary, secondary and concentration cells; Reference electrodes - Calomel electrode; Ion-selective electrodes - Glass electrode. Determination of pH using glass electrode, numerical on concentration cells. **CORROSION** - Definition, Electrochemical theory of corrosion, Types of corrosion - differential metal, differential aeration; Corrosion Penetration Rate (CPR) , numerical. Corrosion control: Metal coating-Galvanization,Inorganic coatings – anodizing.Cathodic protection – Sacrificial anode, Metal finishing - Introduction, technological importance; Electroless plating: Introduction, Electroless plating of copper (PCB).	9
Module – 2 **Energy: Sources, Conversion and Storage**	**No.of Hrs**
Chemical fuels : Introduction, Calorific value - definition, gross and net calorific values; Determination of calorific value of a solid / liquid fuel using Bomb calorimeter and numerical on calorific value; Petroleum cracking - fluidized bed catalytic cracking; Octane number. **Sustainable energy sources**: Hydrogen as a fuel - advantages, production and storage.Production of Biodiesel. Solar cells - Construction and working of Si based PV cell, advantages. Quantum Dot Sensitized Solar Cells (QDSSC's) - Principle, Properties and Applications. **Electrochemical Energy Systems**: Introduction to batteries, Classification of batteries - primary and secondary batteries; construction, working and applications of Lithium ion batteries.	9
Module – 3 **Polymers for Engineering Applications**	**No.of Hrs**
Polymers - Introduction, Molecular weight - number average and weight average molecular weight, Polydispersion index, numerical problems;; **Plastics** - Definition of resins and plastics; Synthesis, properties and applications of PMMA; **Elastomers** - Synthesis, properties and application of butyl rubber; **Adhesives**: Synthesis, properties and applications of epoxy resin. **Polymer composites** - Composites as structural material; Synthesis and applications of Kevlar; **Biodegradable polymers** - Introduction, Lactic acid - synthesis, uses	9
Module – 4 **Materials for Memory & Display System**	**No.of Hrs**
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	9

materials used in optoelectronic devices. Liquid crystals (LC's) - Introduction, classification. Properties and application of Liquid Crystal. 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). Self-learning: Properties and functions of Silicon(Si),Germanium(Ge),Copper(Cu), Aluminium(Al),andBrominated flame retardants in computers.		
Module – 5 **Sensors, Nantochemistry & E-Waste Management**		**No.of Hrs**
SENSORS: Introduction, working, principle and applications of Electrochemical sensors. Electrochemical gas sensors for SOx and NOx. **NanoChemistry**: Introduction, Synthesis of nanoparticles by using bottom Up method-Sol Gel,precipitation method. **Nanomaterials**: properties and engineering application of carbon nanotubes and graphene. **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.Extraction of gold from E-waste.		9

Course Outcomes: At the end of the course, the students will be able to	
CO1	Understand and apply the principles of chemistry involved in water treatment, corrosion, energy sources, polymers, nanomaterials, phase equilibria, alloys, ceramics and instrumental methods of analysis.
CO2	Analyse the Engineering problems and draw meaningful inferences through applied chemistry.
CO3	Implement sustainable solutions through concepts of Applied Chemistry in the field of Materials, Energy and Environment
CO4	Engage in self-study and make an effective oral presentation on contribution of Chemistry to society
CO5	Apply the knowledge of chemistry to investigate engineering materials by volumetric and instrumental methods and analyze, interpret the data to assess and address the issues of Environmental Pollution

Text Books	
1	Uppal M.M, Jain and Jain. Engineering Chemistry, Khanna Publishers, 45th Edition, 2020.
2	P.C. Jain and Monica Jain, A text Book of Engineering Chemistry, Dhanpat Rai Publications, New Delhi, 20th Edition, 2020

Reference Text Books	
1	S S Dara -A Text book of Engineering Chemistry, S Chand & Company Ltd., 15th Edition, 2020
2	B. S. Jai Prakash, R. Venugopal, Sivakumaraiah & Pushpa Iyengar. "Chemistry for Engineering Students", Shubash Publications, Bangalore. 10th Edition, 2020
3	F. W. Billmeyer, Text Book of Polymer Science, John Wiley & Sons, 15th Edition, 2020
4	B. K. Sharma- A text book of Industrial Chemistry. 15th Edition, 2020.
5	G.A. Ozin & A.C. Arsenault, "Nanotechnology A Chemical Approach to Nanomaterials". RSC Publishing, 5th Edition, 2020
6	Wiley Engineering Chemistry, Wiley India Pvt. Ltd. New Delhi, 2013- 2nd Edition

Web links and Video lectures (e-Resources)
1. https://www.youtube.com/watch?v=faESCxAWR9k
2. https://www.youtube.com/watch?v=TBqXMWaxZYM&list=PLyhmwFtznRhuz8L1bb 3X- 9IbHrDMjHWWh
3. https://www.youtube.com/watch?v=j5Hml6KN4TI
4. https://www.youtube.com/watch?v=X9GHBdyYcyo
5. https://www.youtube.com/watch?v=1xWBPZnEJk8
6. https://www.youtube.com/watch?v=wRAo-M8xBHM.

PRACTICAL MODULE

A – Demonstration (any two) offline/virtual:

A1. Chemical Structure drawing using software: ChemDraw or ACD/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 pKa of vinegar using pH sensor (Glass electrode)

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 flame photometry

C5. Determination of Chemical Oxygen Demand (COD) of 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 photovoltaic cell.

D3. Design an experiment to Identify the presence of proteins in given sample.

D4. Searching suitable PDB file and target for molecular docking

CIE Evaluation

Assessment Details both (CIE and SEE)

The weightage of continuous Internal Evaluation (CIE) is 50% and for the Semester End Examination (SEE) is 50%. The minimum passing mark for the CIE is 40% of maximum marks (20 marks out of 50). The minimum passing mark for SEE is 35% of 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 course. Student has to secure a minimum 40% (40 marks out of 100) in the total of the CIE and SEE together.

The CIE marks for the theory component of the **Integrated Course (IC)** shall be 25 marks and for the laboratory component 25 marks

CIE for the theory component of IC:
1. Three tests each of 50 marks, after the completion of the syllabus 40%, 70% and 100% respectively.
2. Average of best two internal assessment tests each of 50 marks, scale down to 30 marks.
3. Any two assessment methods as per regulations i.e. Two assignments / Two Quizzes/ Weekly test / project work for (20+20) marks, scaled down to 20 marks.
4. Total marks scored (30+20 = 50 marks) scaled down to **25**.

CIE for the Practical component of IC:

1. On completion of every experiment / program in the laboratory, the students shall be evaluated and marks shall be awarded on the same day.
2. Each experiment is evaluated for 10 marks and scaled down to **5 marks**
3. Laboratory test at the end of the 15th week of the semester / after completion of all the experiments shall be conducted for **50 marks** and scaled down to **20 marks.**
4. Total marks scored for lab component: 05+20= **25 marks**.
5. The minimum marks to be secured in CIE to appear for SEE shall be 10(40% of maximum marks 25) in the theory and 10(40% of Maximum marks 25) in the practical.
6. The laboratory component of the **integrated course** shall be CIE only. However, in SEE, the questions from the practical component shall be included.
7. The maximum of 05 questions is to be set from the practical component and the total marks of all questions should not be more than 25 marks.

Theory				
IA Test	Exam conducted for	Scaled down to	Average of best two tests	Total
IA-1	50	30		
IA-2	50	30	30	
IA-3	50	30		50/2=25
Two Assignments	2X10=20	10	10	
Two Quizzes	2X10=20	10	10	

LAB			
Continuous performance and record writing	Each experiments evaluated for 10 marks	Scaled down to 05 marks	5+20=25
Internal Test + Viva voce	Exam conducted for 50 Marks	Scaled down to 20 marks	

Semester End Examination (SEE)

1. The question paper shall be set for 100 marks and duration of SEE is 3 hours.
2. The question paper will have two parts: Part –A and Part – B
3. **Part - A** should contain minimum **Two or Four** quiz questions from each module of 02 marks / 01 mark each. **Part - A is Compulsory** and carries 20 Marks.
4. **Part - B** contains two questions of 16 marks (with minimum of 3 sub questions) from each module with internal choice. Students should answer five full questions, selecting one full question from each module.
5. Students have to answer for 100 marks and marks scored out of 100 shall be proportionally reduced to 50 marks.
6. Question papers to be set as per the Blooms Taxonomy levels.

Q. No	CONTENTS	MARKS
	Rubrics for Semester End Examination (SEE)	
	PART - A	
1	Two or Four Quiz questions from each module of 2 marks / 1 mark	20
	PART – B (Minimum 3 subdivisions only)	
2 or 3	Module : 1	16
4 or 5	Module : 2	16
6 or 7	Module : 3	16
8 or 9	Module : 4	16
10 or 11	Module : 5	16
	TOTAL	100

CO-PO Mapping

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

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

Semester I/II				
Computer Aided Engineering Drawing Category: ESC (Common to all branches) (Practical)				
Course Code	:	**B24CEDK103/203**	CIE	:	50 Marks
Teaching Hours L : T : P	:	2:0:2	SEE	:	50 Marks
Total Hours	:	45	Total	:	100 Marks
Credits		03	SEE Duration	:	3 Hrs

Course Objectives	
1	To understand the basic principles and conventions of engineering drawing
2	To use drawing as a communication mode
3	To generate pictorial views using CAD software
4	To understand the development of surfaces
5	To visualize engineering components

Module - 1	No. of Hrs
Introduction: 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 all quadrants. Orthographic projections of lines (Placed in First quadrant only). Orthographic projections of planes similar to Triangle, Square, Rectangle, Pentagon, Hexagon, and Circular laminas **(Placed in First Quadrant only using Change of Position Method).**	**9 Hrs**
Module - 2	No. of Hrs
Orthographic Projection of Solids: Orthographic projection of right regular solids Prisms (Square, Pentagon, Hexagon) & Pyramids (Square, Pentagon, Hexagon), Cones, Cubes & Tetrahedron. **(Only Solids Resting on HP using Change of Position Method)**	**9 Hrs**
Module - 3	No. of Hrs
Isometric Projections: Isometric scale, Isometric projection of hexahedron (cube), right regular prisms, pyramids, cylinders, cones and spheres. Isometric projection of combination of two and three simple solids. **(Conversion of simple isometric drawings into orthographic views)**	**9 Hrs**

Module - 4	No. of Hrs
Development of Lateral Surfaces of Solids: Development of lateral surfaces of right regular prisms, cylinders, pyramids and cones resting with base on HP only. Problems on applications of development of lateral surfaces ex: Funnels Development of lateral surfaces of their frustums and truncations.	**9 Hrs**

Module - 5	No. of Hrs
Multidisciplinary Applications & Practice using CAD software (*For CIE Only*): **Free hand Sketching:** True free hand, Guided Free hand, Roads, Buildings, Utensils, Hand tools & Furniture's etc. **Drawing Simple Mechanisms: (Only for ME with allied branches)** Bicycles, Tricycles, Gear trains, Ratchets, two-wheeler cart & Four-wheeler carts to dimensions etc. **Electric Wiring and lighting diagrams: (Only for EEE with allied branches)** Automatic fire alarm, Call bell system, UPS system, Basic power distribution system. **Basic Building Drawing: (Only for Civil with allied branches)** Architectural floor plan, basic foundation drawing, steel structures-frames, bridges, trusses. **Flow charts drawings: (Only for CSE with allied branches)** Types of flow charts like Process Flowchart, Workflow Diagram, Swimlane Flowchart, Data Flow Diagram, System Flowchart, and Decision Flowchart. **Electronics Engineering Drawings: (Only for ECE with allied branches)** Simple electronics circuit drawings, practice on layers concept.	**9 Hrs**

Course Outcomes: At the end of the course, the students will be able to	
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 through its graphical representation.

Text Books	
1.	K. R. Gopalakrishna, & Sudhir Gopalakrishna: Textbook of Computer Aided Engineering Drawing, 39th Edition, Subash Stores, Bangalore, 2017.
2.	Bhatt, N.D., Engineering Drawing: Plane and Solid Geometry, 53rd Edition, Charotar Publishing House Pvt. Limited, 2019.

Reference Text Books
S. N. Lal & T Madhusudhan, Engineering Visualization, 1st Edition, Cengage, Publication.

Parthasarathy N. S., Vela Murali, Engineering Drawing, Oxford University Press,2015.

Bhattacharya S. K., Electrical Engineering Drawing, New Age International publishers, second edition 1998, reprint, 2005.

Web links and Video lectures (e-Resources)
1. https://youtu.be/GFu1yqgB5g0
2. https://youtu.be/p62LPzFqGQw

CONTINUOUS INTERNAL EVALUATION (CIE)

Assessment Details (both CIE and SEE):

1) The weightage of Continuous Internal Evaluation (CIE) is 50% and for Semester End Exam (SEE) is 50%.

2) 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).

3) 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.

- IA Test- 3 covering all the modules is to be conducted for Max. Marks of 100 and evaluation to be based SEE pattern, and the same is to be scaled down to 15 marks.

- The final CIE = Class work marks + Test marks.

RUBRIC FOR THE CONTINUOUS INTERNAL EVALUATION (CIE)				
Particulars	**Marks**	**Evaluation Weightage in marks**	**Reduced to**	**Total**
IA-1	**50**	Best of Two Internals	**10**	**25**
IA-2	**50**			
IA-3	**50**	Lab Mock Exam	**15**	
Sketch Book	**20**	Sketch Book + Assignments	**-**	**25**
Assignments	**5**			
			Total	**50**

Semester End Examination (SEE)

1) SEE shall be conducted and evaluated for maximum marks 100. Marks obtained shall be accounted for SEE final marks, reducing it by 50%

2) 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 Text Books.**

3) **Related to Module-1:** One full question can be set either from **"points & lines"** or **"planes".**

4) Evaluation shall be carried jointly by both the examiners.

5) Scheme of Evaluation: To be defined by the examiners jointly and the same shall be submitted to the university along with question paper.

6) 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.

RUBRIC FOR THE SEMESTER END EXAMINATION (SEE)			
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 (Reduced to 50 Marks)**	

CO-PO Mapping

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO-1	3	-	-	-	2	-	-	-	-	3	-	-
CO-2	3	-	-	-	3	-	-	-	-	3	-	-
CO-3	3	-	-	-	3	-	-	-	-	3	-	-
CO-4	3	-	-	-	3	-	-	-	-	3	-	-
CO-5	3	-	-	-	2	-	-	-	-	3	-	-

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

MOOGAMBIGAI CHARITABLE AND EDUCATIONAL TRUST

Rajarajeswari College of Engineering
(An Autonomous Institution Under Visvesvaraya Technological University, Belagavi)

Semester I/II				
Introduction to Electrical Engineering Category: ESC- I/II (Common to All Branches except EEE) (Theory)				
Course Code	:	**B24ESCK142/242**	CIE	:	50 Marks
Teaching Hours L : T : P	:	3:0:0	SEE	:	50 Marks
Total Hours	:	45	Total	:	100 Marks
Credits		3	SEE Duration	:	3 Hrs

Course Objectives	
1	To explain the power generation concepts and laws used in the analysis of DC circuits.
2	To explain the behavior of circuit elements in single-phase and three phase circuits.
3	To describe the construction and operation DC machines and Transformers
4	To describe the application of renewable energy and introduction to EV
5	To describe domestic wiring and safety measures.

Module - 1	No. of Hrs
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 Numerical.	09
Module - 2	**No. of Hrs**
Single Phase Circuits: 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. **Three Phase Circuits:** Generation of Three phase AC quantity, Advantages and limitations; Star and Delta connection, Relationship between line and phase quantities	09
Module - 3	**No. of Hrs**
DC Machines: DC Generator: Principle of operation, Constructional details, Induced EMF expression, Types of generators, Relation between induced EMF and terminal voltage, simple numericals on EMF equation, DC Motor**:** Principle of operation, Back EMF and its significance, Types of motors, characteristics and speed control (armature & field) of DC motors (series & shunt only), Torque equation, Applications of DC motors **Transformers:** Necessity of transformer, Principle of operation, Types and construction of single phase transformers, EMF equation, Losses of transformer, Efficiency, Simple numerical on Losses and Efficiency	09
Module - 4	**No. of Hrs**
Applications of Renewable energy: Photovoltaic Systems, Solar distillation; Solar Pond electric power plant, Off grid solar inverter, Urban waste to energy conversion, Hydrogen based transportation system Introduction to EV: History, General block diagram, Application and Benefits	09
Module - 5	**No. of Hrs**
Domestic Wiring: Requirements, Types of wiring: casing, capping. Two way and three way control of load.	09

Electrical Safety: Working principle of Fuse and Miniature circuit breaker (MCB), merits and demerits, Electric Shock, Earthing and its types, Safety Precautions to avoid shock

Electricity bill: Power consumption of electrical energy, Two-part electricity tariff, *Case study on calculation of electricity bill for domestic consumers.*

Course Outcomes: At the end of the course, the students will be able to	
CO1	Understand the concepts of power generation and and solve DC circuit problems
CO2	Analyze single-phase circuits, solve R-L, R-C, and R-L-C circuits, and comprehend three-phase circuit principles.
CO3	Understand DC machines, transformers and their characteristics
CO4	Understand the application of renewable energy and basics of EV
CO5	Understand domestic wiring and safety measures

Text Books	
1	D C Kulshreshtha, Basic Electrical Engineering, Tata McGraw Hill, First Edition 2019
Reference Books	
1	B.L. Theraja, A text book of Electrical Technology, S Chand and Company, reprint edition 2014.
2	G D Rai, Nonconventional Energy sources, , Khanna Publication, Fourth Edition, 1988
3	D. P. Kothari and I. J. Nagrath, Basic Electrical Engineering, , Tata McGraw Hill 4th edition, 2019.
4	V. K. Mehta, Rohit Mehta, Principles of Electrical Engineering & Electronics, S. Chand and Company Publications, 2nd edition, 2015.
5	Rajendra Prasad, Fundamentals of Electrical Engineering, PHI, 3rd edition, 2014.
6	Iqbal Husain, Electric and Hybrid Vehicles Design Fundamentals, CRC Press, second edition,2011.

CIE Evaluation

Assessment Details both (CIE and SEE)

The weightage of continuous Internal Evaluation (CIE) is 50% and for the Semester End Examination (SEE) is 50%. The minimum passing mark for the CIE is 40% of maximum marks (20 marks out of 50). The minimum passing mark for SEE is 35% of 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 course. Student has to secure a minimum 40% (40 marks out of 100) in the total of the CIE and SEE together.

CIE for the theory:

1. Three tests each of 50 marks, after the completion of the syllabus 40%, 70% and 100% respectively.
2. Average of best two internal assessment tests each of 50 marks, scale down to 30 marks.
3. Any two assessment methods as per regulations i.e. Two assignments / Two Quizzes/ Weekly test / project work for 40 marks, scaled down to 20 marks.
4. Total marks scored (30+20 = 50 marks).
5. The minimum passing mark for the CIE is 40% of maximum marks (20 marks out of 50)

Theory				
IA Test	**Exam conducted for**	**Scaled down to**	**Average of best two tests**	**Total**
IA-1	**50**	**30**	**30**	**30+10+10=50**
IA-2	**50**	**30**		
IA-3	**50**	**30**		
Two Assignments	**2X10=20**	**10**	**10**	
Two Quizzes	**2X10=20**	**10**	**10**	

Semester End Examination (SEE)

1. The question paper shall be set for 100 marks and duration of SEE is 3 hours.
2. The question paper will have two parts: Part –A and Part – B
3. **Part - A** should contain minimum **Two or Four** quiz questions from each module of 02 marks / 01 mark each. **Part - A is Compulsory** and carries 20 Marks.
4. **Part - B** contains two questions of 16 marks (with minimum of 3 sub questions) from each module with internal choice. Students should answer five full questions, selecting one full question from each module.
5. Students have to answer for 100 marks and marks scored out of 100 shall be proportionally reduced to 50 marks.
6. Question papers to be set as per the Blooms Taxonomy levels.

Rubrics for Semester End Examination (SEE)		
Q. No	CONTENTS	MARKS
	PART - A	
1	Two or Four Quiz questions from each module of 2 marks / 1 mark	20
	PART – B (Minimum 3 subdivisions only)	
2 or 3	Module : 1	16
4 or 5	Module : 2	16
6 or 7	Module : 3	16
8 or 9	Module : 4	16
10 or 11	Module : 5	16
	TOTAL	100

CO-PO Mapping

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

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

Semester I/II				
Introduction to Python Programming Category: PLC- I/II (Common to All Branches) (Integrated)				
Course Code	:	**B24PLCK152/252**	CIE	:	50 Marks
Teaching Hours L : T : P	:	2:0:2	SEE	:	50 Marks
Total Hours	:	45(T) + 15(P)	Total	:	100 Marks
Credits		3	SEE Duration	:	3 Hrs

Course Objectives	
1.	Learn the syntax and semantics of the Python programming language.
2.	Readily use the Python functions to facilitate code reuse and manipulate strings.
3.	Apply various structuring the data using lists, tuples
4.	Understand the need for working with various documents like Excel, PDF, Word and Others.
5.	Understand the Object-Oriented Programming concepts in Python.

Module - 1	No. of Hrs
Python Basics: The Python programming language, Program, Debugging, Variables, Expressions, and Statements, Entering expressions into the Interactive Shell, Your first program, Dissecting your program. **Flow control:** Boolean Values, Comparison Operators, Boolean Operators, Mixing Boolean and Comparison Operators, Elements of Flow Control, Program Execution, Flow Control Statements, Importing Modules, Ending a Program Early with sys. exit (). **Textbook 1: Chapters 1 – 2 Textbook 2: Chapters 1.1-1.3, Chapter 2.1-2.10**	09
Module - 2	No. of Hrs
Functions: def Statements with Parameters, Return Values, and return Statements, The None Value, Keyword Arguments, and print(), Local and Global Scope, the global Statement, Exception Handling, A Short Program: Guess the Number. **Lists:** The List Data Type, Working with Lists, Augmented Assignment Operators, Methods, Example Program: Magic 8 Ball with a List, List-like Types: Strings and Tuples, References. **Textbook 1: Chapters 3, 4**	09
Module - 3	No. of Hrs
Dictionaries and Structuring Data: The Dictionary Data Type, Pretty Printing, Using Data Structures to Model Real-World Things. **Manipulating Strings:** Working with Strings, Useful String Methods, Project: Password Locker**.** **Textbook 1: Chapters 5, 6**	09
Module - 4	No. of Hrs
Reading and Writing Files: Files and File Paths, The os.path Module, The File Reading/Writing Process, Saving Variables with the shelve Module, Saving Variables with the print.format() Function, Project: Generating Random Quiz Files, Project: Multi-clipboard. **Working with Excel Spreadsheets:** Installing the openpyxl Module, Reading Excel Documents, Writing Excel Documents. **Textbook 1: Chapters 8, 9 and 12**	09
Module - 5	No. of Hrs
Classes and objects: Programmer defined types, Attributes, Rectangles, Instances as return values, Objects are mutable, Copying,	

Classes and functions: Time, Pure functions, Modifiers. **Classes and methods:** Object-oriented features, Printing objects, Another example, A more complicated example, The init method, The str method, Operator overloading, Type-based dispatch, Polymorphism, Interface, and implementation. **Textbook 2: Chapters 15 – 17**	09

Course Outcomes: At the end of the course, the students will be able to	
CO1	Understand the fundamental programming constructs to solve basic computational problems.
CO2	Learn the flow of execution and the need for debugging to rectify program bugs proficiently.
CO3	Utilize the methods to create and manipulate the importance of data structures in problem-solving.
CO4	Know the structured and modular code using appropriate Object-Oriented Programming paradigms.
CO5	Apply the acquired skills to provide solutions to real-world problems.

Practical Component	
Sl. No.	**Experiments for Conduction**
1.	a) Develop a program to read the student details like Name, USN, and Marks in three subjects. Display the student details, total marks, and percentages with suitable messages. b) Develop a program to read the name and year of birth of a person. Display whether the person is a senior citizen or not.
2.	a) Develop a program to generate Fibonacci sequence of length (N). Read N from the console. b) Write a function to calculate the factorial of a number. Develop a program to compute binomial coefficient (Given N and R).
3.	Read N numbers from the console and create a list. Develop a program to print mean, variance, and standard deviation with suitable messages.
4.	Read a multi-digit number (as chars) from the console. Develop a program to print the frequency of each digit with a suitable message.
5.	Develop a program to print the 10 most frequently appearing words in a text file. [Hint: Use a dictionary with distinct words and their frequency of occurrences. Sort the dictionary in the reverse order of frequency and display the dictionary slice of the first 10 items]
6.	Develop a program to sort the contents of a text file and write the sorted contents into a separate text file. [Hint: Use string methods *strip(), len(),* list methods *sort(), append(),* and file methods *open(), readlines()*, and *write()*].
7.	Implement a Python program to perform the following operations on an Excel spreadsheet: • Reading the first 5 rows of all columns • Appending a new row / new column • Delete row/column • To perform aggregate functions
8.	Write a function named *DivExp* which takes TWO parameters *a, b* and returns the value of *c, where*

	c=a/b. Write suitable assertion for *a>0* in function *DivExp* and raise an exception for when *b=0*. Develop a suitable program which reads two values from the console and calls a function *DivExp*.
9.	Define a function which takes TWO objects representing complex numbers and returns new complex number with an addition of two complex numbers. Define a suitable class 'Complex' to represent the complex number. Develop a program to read *N (N >=2)* complex numbers and to compute the additionof *N* complex numbers.
10.	Develop a program that uses class Student which prompts the user to enter marks in three subjects and calculates total marks, percentage and displays the score card details. [Hint: Use list to store the marks in three subjects and total marks. Use *_init_()* method to initialize name, USN and the lists to store marks and total, Use *getMarks()* method to read marks into the list, and *display()* method to display the score card details.]

Text Books	
1.	Al Sweigart,"Automate the Boring Stuff with Python",1st Edition, No Starch Press, 2015. (Available under CC-BY-NC-SA license at https://automatetheboringstuff.com/) (Chapters 1 to 18, except 12) for lambda functions use this link: https://www.learnbyexample.org/python-lambda-function/
2.	Allen B. Downey, "Think Python: How to Think Like a Computer Scientist", 2nd Edition, Green Tea Press, 2015. (Available under CC-BY-NC license at http://greenteapress.com/thinkpython2/thinkpython2.pdf (Chapters 13, 15, 16, 17, 18) (Download pdf/html files from the above link)
Reference Text Books	
1.	Charles Dierbach, "Introduction to Computer Science Using Python", 1st Edition, Wiley India Pvt Ltd. ISBN-13: 978-8126556014.
2.	Wesley J Chun, "Core Python Applications Programming", 3rd Edition, Pearson Education India, 2015. ISBN-13: 978-9332555365.
3.	Roberto Tamassia, Michael H Goldwasser, Michael T Goodrich, "Data Structures and Algorithms in Python", 1st Edition, Wiley India Pvt Ltd, 2016. ISBN-13: 978-8126562176.
4.	Charles R. Severance, "Python for Everybody: Exploring Data Using Python 3", 1 st Edition, Shroff Publishers, 2017. ISBN: 978-9352136278.
5.	Reema Thareja, "Python Programming using problem solving approach", Oxford University press, 2017. ISBN-13: 978-0199480173.

Web links and Video lectures (e-Resources)
1.   https://www.learnbyexample.org/python/
2.   https://www.learnpython.org/
3.   https://pythontutor.com/visualize.html#mode=edit
4.   https://www.datacamp.com/tutorial/python-excel-tutorial

CIE Evaluation

Assessment Details both (CIE and SEE)

The weightage of continuous Internal Evaluation (CIE) is 50% and for the Semester End Examination (SEE) is 50%. The minimum passing mark for the CIE is 40% of maximum marks (20 marks out of 50). The minimum passing mark for SEE is 35% of 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 course. Student has to secure a minimum 40% (40 marks out of 100) in the total of the CIE and SEE together.

The CIE marks for the theory component of the **Integrated Course (IC)** shall be 25 marks and for the laboratory component 25 marks

CIE for the theory component of IC:

1. Three tests each of 50 marks, after the completion of the syllabus 40%, 70% and 100% respectively.
2. Average of best two internal assessment tests each of 50 marks, scale down to 30 marks.
3. Any two assessment methods as per regulations i.e. Two assignments / Two Quizzes/ Weekly test / project work for (20+20) marks, scaled down to 20 marks.
4. Total marks scored (30+20 = 50 marks) scaled down to **25**.

CIE for the Practical component of IC:

1. On completion of every experiment / program in the laboratory, the students shall be evaluated and marks shall be awarded on the same day.
2. Each experiment is evaluated for 10 marks and scaled down to **5 marks**
3. Laboratory test at the end of the 15th week of the semester / after completion of all the experiments shall be conducted for **50 marks** and scaled down to **20 marks.**
4. Total marks scored for lab component: 05+20= **25 marks**.
5. The minimum marks to be secured in CIE to appear for SEE shall be 10(40% of maximum marks 25) in the theory and 10(40% of Maximum marks 25) in the practical.
6. The laboratory component of the **integrated course** shall be CIE only. However, in SEE, the questions from the practical component shall be included.
7. The maximum of 05 questions is to be set from the practical component and the total marks of all questions should not be more than 25 marks.

Theory				
IA Test	Exam conducted for	Scaled down to	Average of best two tests	Total
IA-1	50	30		
IA-2	50	30	30	
IA-3	50	30		50/2=25
Two Assignments	2X10=20	10	10	
Two Quizzes	2X10=20	10	10	

LAB			
Continuous performance and record writing	Each experiments evaluated for 10 marks	Scaled down to 05 marks	5+20=25
Internal Test + Viva voce	Exam conducted for 50 Marks	Scaled down to 20 marks	

Semester End Examination (SEE)

1. The question paper shall be set for 100 marks and duration of SEE is 3 hours.
2. The question paper will have two parts: Part –A and Part – B
3. **Part - A** should contain minimum **Two or Four** quiz questions from each module of 02 marks / 01 mark each. **Part - A is Compulsory** and carries 20 Marks.
4. **Part - B** contains two questions of 16 marks (with minimum of 3 sub questions) from each module with internal choice. Students should answer five full questions, selecting one full question from each module.
5. Students have to answer for 100 marks and marks scored out of 100 shall be proportionally reduced to 50 marks.
6. Question papers to be set as per the Blooms Taxonomy levels.

Q. No	CONTENTS	MARKS
	Rubrics for Semester End Examination (SEE)	
	PART - A	
1	Two or Four Quiz questions from each module of 2 marks / 1 mark	20
	PART – B (Minimum 3 subdivisions only)	
2 or 3	Module : 1	16
4 or 5	Module : 2	16
6 or 7	Module : 3	16
8 or 9	Module : 4	16
10 or 11	Module : 5	16
	TOTAL	100

CO-PO Mapping

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

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

Common Courses

II Semester – Chemistry Cycle

Semester-II
Professional Writing Skills
Category: AEC
Common to All Branches
(Theory)

Course Code	:	**B24PWSK206**	CIE	:	50 Marks
Teaching Hours L : T : P	:	1:0:0	SEE	:	50 Marks
Total Hours	:	15	Total	:	100 Marks
Credits	:	1	SEE Duration	:	1 Hr

Course Objectives: The course Professional Writing Skills in English will enable the students,	
1.	To Identify the Common Errors in Writing and Speaking of English.
2.	To Achieve better Technical writing and Presentation skills for employment.
3.	To read Technical proposals properly and make them to write good technical reports.
4.	To Acquire Employment and Workplace communication skills.
5.	To learn about Techniques of Information Transfer through presentation in different level.

Teaching-Learning Process

These are sample Strategies, which teacher can use to accelerate the attainment of the various course outcomes and make Teaching –Learning more effective: Teachers shall adopt suitable pedagogy for effective teaching - learning process. The pedagogy shall involve the combination of different methodologies which suit modern technological tools and software's to meet the present requirements of the Global employment market.

(i) Direct instructional method (Low/Old Technology), (ii) Flipped classrooms (High/advanced Technological tools), (iii) Blended learning (Combination of both), (iv) Enquiry and evaluation based learning, (v) Personalized learning, (vi) Problems based learning through discussion, (vii) Following the method of expeditionary learning Tools and techniques, (viii) Use of audio visual methods through language Labs in teaching of LSRW skills.

Apart from conventional lecture methods, various types of innovative teaching techniques through videos, animation films may be adapted so that the delivered lesson can progress the students In theoretical applied and practical skills in teaching of communicative skills in general.

Module - 1	No. of Hrs
Identifying Common Errors in Writing and Speaking English : Common errors identification in parts of speech, Use of verbs and phrasal verbs, Auxiliary verbs and their forms, Subject Verb Agreement (Concord Rules), Common errors in Subject-verb agreement, Sequence of Tenses and errors identification in Tenses. Words Confused/Misused.	03
Module - 2	No. of Hrs
Nature and Style of sensible writing: Organizing Principles of Paragraphs in Documents, Writing Introduction and Conclusion, Importance of Proper Punctuation, Precise writing and Techniques in Essay writing, Sentence arrangements and Corrections activities. Misplaced modifiers, Contractions, Collocations, Word Order, Errors due to the Confusion of words.	03
Module - 3	No. of Hrs
Technical Reading and Writing Practices: Technical writing process, Introduction to Technical Reports writing, Significance of Reports, Types of Reports. Introduction to Technical Proposals Writing, Types of Technical Proposals, Characteristics of Technical Proposals. Scientific Writing Process. Grammar – Voices and Reported Speech, Spotting Error & Sentence Improvement, Cloze Test and Theme Detection Exercises.	03
Module - 4	No. of Hrs
Professional Communication for Employment: Listening Comprehension, Types of Listening,	

Listening Barriers, Improving Listening Skills. Reading Comprehension, Tips for effective reading. Job Applications, Types of official/employment/business Letters, Resume vs. Bio Data, Profile, CV. Writing effective resume for employment, Emails, Blog Writing and Memos.	03

Module - 5	No. of Hrs
Professional Communication at Workplace: Group Discussion and Professional Interviews, Characteristics and Strategies of a GD and PI's, Intra and Interpersonal Communication Skills at workplace, Non-Verbal Communication Skills and its importance in GD and Interview. Presentation skills and Formal Presentations by Students, Strategies of Presentation Skills.	03

Course Outcomes: At the end of the course, the students will be able to	
CO1	To understand and identify the Common Errors in Writing and Speaking.
CO2	To Achieve better Technical writing and Presentation skills.
CO3	To read Technical proposals properly and make them to Write good technical reports.
CO4	Acquire Employment and Workplace communication skills.
CO5	To learn about Techniques of Information Transfer through presentation in different level.

Text Books	
1.	**"Professional Writing Skills in English"** published by Fillip Learning – Education (ILS), Bangalore – 2022.
2.	**"Functional English"** (As per AICTE 2018 Model Curriculum) (ISBN-978-93-5350-047-4) Cengage learningIndia Pvt Limited [Latest Edition 2019].
Reference Text Books	
1.	**English for Engineers** by N.P.Sudharshana and C.Savitha, Cambridge University Press – 2018.
2.	**Technical Communication** by Gajendra Singh Chauhan and Et al, (ISBN-978-93-5350-050-4), Cengage learningIndia Pvt Limited [Latest Revised Edition] - 2019.
3.	**Technical Communication** – Principles and Practice, Third Edition by Meenakshi Raman and Sangeetha Sharma,Oxford University Press 2017.
4.	**High School English Grammar & Composition** by Wren and Martin, S Chandh & Company Ltd – 2015.
5.	**Effective Technical Communication** – Second Edition by M Ashraf Rizvi, McGraw Hill Education (India) Private

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 Unit Tests each of 50 Marks (duration 01 hour). The pattern of the question paper is MCQ (multiple choice questions).

1st, 2nd, and 3rd tests shall be conducted after completion of the syllabus of 30-35%, 70-75%, and 100% of the course/s respectively. However best two tests out of three shall be taken into consideration.

Two assignments each of 10 Marks. The teacher has to plan the assignments and get them completed by the students well before the closing of the term so that marks entry in the examination portal shall be done in time.

Conducting Seminar for 10 Marks. The Teachers shall choose the types of assignments depending on the requirement of the course and plan to attain the Cos and POs.

Total Marks scored = Average of best two tests (30) + Two Assignments (10) + Seminar (10) = 50 Marks (maximum)

Semester End Examinations (SEE): SEE paper shall be set for 50 questions, each of the 01 mark. The pattern of the question paper is MCQ (multiple choice questions). The time allotted for SEE is 01 hour. The student must secure a minimum of 35% of the maximum marks for SEE.

Activity Based Learning (Suggested Activities in Class)/ Practical Based learning
- ✓ Contents related activities (Activity-based discussions)
- ✓ For active participation of students instruct the students to prepare Flowcharts and Handouts
- ✓ Organising Group wise discussions Connecting to placement activities
- ✓ Quizzes and Discussions, Seminars and assignments

Semester-I/II				
ಸಾಂಸ್ಕೃತಿಕ ಕನ್ನಡ-ಕನ್ನಡ ಬಲ್ಲ ಮತ್ತು ಕನ್ನಡ ಮಾತೃಭಾಷೆಯ ವಿದ್ಯಾರ್ಥಿಗಳಿಗೆ ನಿಗದಿಪಡಿಸಿದ ಪಠ್ಯಕ್ರಮ **Category: HSMC** **Common to All Branches** **(Theory)**				
Course Code	:	B24HSKK107/207	**CIE**	:	50 Marks
Teaching Hours L : T : P	:	1:0:0	**SEE**	:	50 Marks
Total Hours	:	15	**Total**	:	100 Marks
Credits	:	1	**SEE Duration**	:	1 Hr

ಸಾಂಸ್ಕೃತಿಕ ಕನ್ನಡ ಪಠ್ಯ ಕಲಿಕೆಯ ಉದ್ದೇಶಗಳು : **Course Objectives:**	
1.	ವೃತ್ತಿಪರ ಪದವಿ ವಿದ್ಯಾರ್ಥಿಗಳಾಗಿರುವುದರಿಂದ ಕನ್ನಡ ಭಾಷೆ, ಸಾಹಿತ್ಯ ಮತ್ತು ಕನ್ನಡದ ಸಂಸ್ಕೃತಿಯ ಪರಿಚಯ ಮಾಡಿಕೊಡುವುದು.
2.	ಕನ್ನಡ ಸಾಹಿತ್ಯದ ಪ್ರಧಾನ ಭಾಗವಾದ ಆಧುನಿಕ ಪೂರ್ವ ಮತ್ತು ಆಧುನಿಕ ಕಾವ್ಯಗಳನ್ನು ಸಾಂಕೇತಿಕವಾಗಿ ಪರಿಚಯಿಸುವುದು.
3.	ಕನ್ನಡ ಸಾಹಿತ್ಯದ ಪ್ರಧಾನ ಭಾಗವಾದ ಆಧುನಿಕ ಪೂರ್ವ ಮತ್ತು ಆಧುನಿಕ ಕಾವ್ಯಗಳನ್ನು ಸಾಂಕೇತಿಕವಾಗಿ ಪರಿಚಯಿಸುವುದು.
4.	ಸಾಂಸ್ಕೃತಿಕ, ಜನಪದ ಹಾಗೂ ಪ್ರವಾಸ ಕಥನಗಳ ಪರಿಚಯ ಬೋವನೆ ಮತ್ತು ಕಲಿಕಾ ವ್ಯವಸ್ಥೆ
5.	ಸಾಂಸ್ಕೃತಿಕ, ಜನಪದ ಹಾಗೂ ಪ್ರವಾಸ ಕಥನಗಳ ಪರಿಚಯ

ಬೋವನೆ ಮತ್ತು ಕಲಿಕಾ ವ್ಯವಸ್ಥೆ (Teaching-Learning Process -General instructions):

These are sample Strategies, which teacher can use to accelerate the attainment of the various course outcomes. and make Teaching –Learning more effective:

Teachers shall adopt suitable pedagogy for effective teaching - learning process. The pedagogy shall involve the combination of different methodologies which suit modern technological tools and software's to meet the present requirements of the Global employment market.

1.ಸಾಂಸ್ಕೃತಿಕ ಕನ್ನಡವನ್ನು ಬೋಧಿಸಲು ತರಗತಿಯಲ್ಲಿ ಶಿಕ್ಷಕರು ಪ್ರಸ್ತುತ ಪುಸ್ತಕ ಆಧರಿಸಿ ಬ್ಲಾಕ್ ಬೋರ್ಡ್ ವಿಧಾನವನ್ನು ಅನುಸರಿಸುವುದು. ಪ್ರಮುಖ ಅಂಶಗಳ ಚಾರ್ಟ್ ಗಳನ್ನು ತಯಾರಿಸಲು ವಿದ್ಯಾರ್ಥಿಗಳನ್ನು ಪ್ರೇರೇಪಿಸುವುದು ಮತ್ತು ತರಗತಿಯಲ್ಲಿ ಅವುಗಳನ್ನು ಚರ್ಚಿಸಲು ಅವಕಾಶ ಮಾಡಿಕೊಡುವುದು

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

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

ಘಟಕ-1 ಕನ್ನಡ ಸಂಸ್ಕೃತಿ ಮತ್ತು ಭಾಷೆ ಕುರಿತಾದ ಲೇಖನಗಳು	No. of Hrs
1.ಕರ್ನಾಟಕ ಸಂಸ್ಕೃತಿ - ಹಂಪಾ ನಾಗರಾಜಯ್ಯ 2.ಕರ್ನಾಟಕದ ಏಕೀಕರಣ ಒಂದು ಅಪೂರ್ವ ಚರಿತ್ರೆ - ಜಿ. ವೆಂಕಟಸುಬ್ಬಯ್ಯ 3.ಆಡಳಿತ ಭಾಷೆಯಾಗಿ ಕನ್ನಡ - ಡಾ. ಎಲ್ ತಿಮ್ಮೇಶ ಮತ್ತು ಪ್ರೊ ವಿ. ಕೇಶವಮೂರ್ತಿ	03
ಘಟಕ -2 ಆಧುನಿಕ ಆಧುನಿಕ ಪೂರ್ವದ ಕಾವ್ಯ ಭಾಗ	No. of Hrs
1.ವಚನಗಳು- ಬಸವಣ್ಣ, ಅಕ್ಕಮಹಾದೇವಿ, ಅಲ್ಲಮಪ್ರಭು , ಆಯ್ದಕ್ಕಿ ಮಾರಯ್ಯ,ಜೇಡರ ದಾಸಿಮಯ್ಯ, ಆಯ್ದಕ್ಕಿ ಲಕ್ಕಮ್ಮ 2.ಕೀರ್ತನೆಗಳು- ಆದರಿಂದೇನು ಫಲ ಇದರಿಂದೇನು ಫಲ - ಪುರಂದರದಾಸರು ತಲ್ಲಣಿಸದಿರು ಕಂಡ್ಯ ತಾಳು ಮನವೇ - ಕನಕದಾಸರು 3.ತತ್ವ ಪದಗಳು ಸಾವಿರ- ಕೊಡಗಳ ಸುಟ್ಟು ಶಿಶುನಾಳ ಷರೀಫ	03
ಘಟಕ -3 ಆಧುನಿಕ ಕಾವ್ಯಭಾಗ	No. of Hrs

1.ಡಿವಿಜಿರವರ ಮಂಕುತಿಮ್ಮನ ಕಗ್ಗದಿಂದ ಆಯ್ದ ಕೆಲವು ಭಾಗಗಳು 2.ಕುರುಡು ಕಾಂಚಾಣ -ದ. ರಾ. ಬೇಂದ್ರೆ 3.ಹೊಸಬಾಳಿನ ಗೀತೆ- ಕುವೆಂಪು	03
ಘಟಕ -4 ತಾಂತ್ರಿಕ ವ್ಯಕ್ತಿಗಳ ಪರಿಚಯ	No. of Hrs
ಡಾ. ಸರ್. ಎಂ ವಿಶ್ವೇಶ್ವರಯ್ಯ :ವ್ಯಕ್ತಿ ಮತ್ತು ಐತಿಹ್ಯ ಎ ಎನ್ ಮೂರ್ತಿರಾವ್ ಕರಕುಶಲ ಕಲೆಗಳು ಮತ್ತು ಪರಂಪರೆಯ ವಿಜ್ಞಾನ ಕರೀಗೌಡ ಬೀಚನಹಳ್ಳಿ	03
ಘಟಕ -5 ಸಾಂಸ್ಕೃತಿಕ ಜನಪದ ಕಥೆ ಮತ್ತು ಪ್ರವಾಸ ಕಥನ	No. of Hrs
1.ಯುಗಾದಿ ವಸುಧೇಂದ್ರ 2.ಮೆಗಾನೆ ಎಂಬ ಗಿರಿಜನ ಪರ್ವತ ಹಿ. ಚಿ ಬೋರಲಿಂಗಯ್ಯ	03

	ಸಾಂಸ್ಕೃತಿಕ ಕನ್ನಡ **(B24HSKK107)**ಪಠ್ಯ ಕಲಿಕೆಯ ನಂತರ ವಿದ್ಯಾರ್ಥಿಗಳಲ್ಲಿ Course Outcomes: At the end of the course, the students will be able to
CO1	ಕನ್ನಡ ಭಾಷೆ ,ಸಾಹಿತ್ಯ ಮತ್ತು ಕನ್ನಡದ ಸಂಸ್ಕೃತಿಯ ಕುರಿತು ಅರಿವು ಮೂಡಿರುತ್ತದೆ.
CO2	ಕನ್ನಡ ಸಾಹಿತ್ಯದ ಪ್ರಧಾನ ಭಾಗವಾದ ಸಾಂಕೇತಿಕವಾಗಿ ಕಲಿತು ಹೆಚ್ಚಿನ ಓದಿಗೆ ಮತ್ತು ಜ್ಞಾನಕ್ಕೆ ಸ್ಫೂರ್ತಿ ಮೂಡಿರುತ್ತದೆ
CO3	ವಿದ್ಯಾರ್ಥಿಗಳಲ್ಲಿ ಸಾಹಿತ್ಯ ಸಂಸ್ಕೃತಿಯ ಬಗ್ಗೆ ಅರಿವು ಹಾಗೂ ಆಸಕ್ತಿಯ ಹೆಚ್ಚಾಗುತ್ತದೆ
CO4	ತಾಂತ್ರಿಕ ವ್ಯಕ್ತಿಗಳ ಪರಿಚಯ ಹಾಗೂ ಅವರುಗಳು ಸಾಧಿಸಿದ ವಿಷಯಗಳನ್ನು ತಿಳಿದುಕೊಂಡು ನಾಡಿನ ಇನ್ನಿತರ ವ್ಯಕ್ತಿಗಳ ಬಗ್ಗೆ ತಿಳಿದುಕೊಳ್ಳಲು ಕೌತುಕತೆ ಹೆಚ್ಚಾಗುತ್ತದೆ.
CO5	ಸಾಂಸ್ಕೃತಿಕ, ಜನಪದ ಹಾಗೂ ಪ್ರವಾಸ ಕಥನಗಳ ಪರಿಚಯ ಮಾಡಿಕೊಡುವುದು.

University prescribed Text Books :

ಸಾಂಸ್ಕೃತಿಕ ಕನ್ನಡ
ಡಾ.ಹಿ. ಚಿ ಬೋರಲಿಂಗಯ್ಯ ಮತ್ತು ಡಾ. ಎಲ್ ತಿಮ್ಮೇಶ
ಪ್ರಕಟಣೆ : ಪ್ರಸಾರಾಂಗ,
ವಿಶ್ವೇಶ್ವರಯ್ಯ ತಾಂತ್ರಿಕ ವಿಶ್ವವಿದ್ಯಾಲಯ, ಬೆಳಗಾವಿ.
ಸೂಚನೆ:
1.ಹೆಚ್ಚಿನ ಮಾಹಿತಿ ಮತ್ತು ವಿವರಣೆಗಳಿಗೆ (9900832331) ಇವರನ್ನು ಸಂಪರ್ಕಿಸಿ.
2.ಮಾದರಿ ಪ್ರಶ್ನೆಪತ್ರಿಕೆ, ಕೋರ್ಸ್ ಆಯ್ಕೆ ಮಾಹಿತಿ, ಅಧ್ಯಯನ ಸಾಮಗ್ರಿ ಮತ್ತು ಬಹು ಆಯ್ಕೆ ಮಾದರಿಯ ಪ್ರಶ್ನೆಗಳ ಕೈಪಿಡಿಗಾಗಿ ವಿಶ್ವವಿದ್ಯಾಲಯದ ವೆಬ್ ಸೈಟ್ ನೋಡುವುದು.

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 Unit Tests each of 50 Marks (duration 01 hour). The pattern of the question paper is MCQ (multiple choice questions).

1st, 2nd, and 3rd tests shall be conducted after completion of the syllabus of 30-35%, 70-75%, and 100% of the course/s respectively. However best two tests out of three shall be taken into consideration.

Two assignments each of 10 Marks. The teacher has to plan the assignments and get them completed by the students well before the closing of the term so that marks entry in the examination portal shall be done in time.

Conducting Seminar for 10 Marks. The Teachers shall choose the types of assignments depending on the requirement of the course and plan to attain the Cos and POs.

Total Marks scored = Average of best two tests (30) + Two Assignments (10) + Seminar (10) = 50 Marks (maximum)

Semester End Examinations (SEE): SEE paper shall be set for 50 questions, each of the 01 mark. The pattern of the question paper is MCQ (multiple choice questions). The time allotted for SEE is 01 hour. The student must secure a minimum of 35% of the maximum marks for SEE.

Activity Based Learning (Suggested Activities in Class)/ Practical Based learning
- Contents related activities (Activity-based discussions)
- For active participation of students instruct the students to prepare Flowcharts and Handouts
- Organizing Group wise discussions Connecting to placement activities
- Quizzes and Discussions, Seminars and assignments

SEMESTER- I /II

ಬಳಕೆ ಕನ್ನಡ
Category: HSMC
Common to All Branches
(Theory)

Course Code	:	**B24HBKK107/207**	CIE	:	50 Marks
Teaching Hours L : T : P	:	1:0:0	SEE	:	50 Marks
Total Hours	:	15	Total	:	100 Marks
Credits	:	1	SEE Duration	:	1 Hr

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

Teaching-Learning Process :ಬೋಧನೆ ಮತ್ತು ಕಲಿಕಾ ವ್ಯವಸ್ಥೆ

These are sample Strategies, which teacher can use to accelerate the attainment of the various course
outcomes and makeTeaching –Learning more effective:

1.ಬಳಕೆ ಕನ್ನಡವನ್ನು ತರಗತಿಯಲ್ಲಿ ಶಿಕ್ಷಕರು ಬೋಧಿಸಲು ವಿಟಿಯು ಸೂಚಿಸಿರುವ ಪಠ್ಯಪುಸ್ತಕವನ್ನು ಉಪಯೋಗಿಸಬೇಕು.
2.ಪ್ರಮುಖ ಅಂಶಗಳ ಚಾರ್ಟ್ ಗಳನ್ನು ತಯಾರಿಸಲು ಉತ್ತೇಜಿಸುವುದು ಮತ್ತು ಅವುಗಳನ್ನು ಚರ್ಚಿಸಲು ಅವಕಾಶ ಮಾಡಿಕೊಡುವುದು.
3.ಪ್ರತಿ ವಿದ್ಯಾರ್ಥಿ ಪುಸ್ತಕವನ್ನು ತರಗತಿಯಲ್ಲಿ ಬಳಸುವಂತೆ ನೋಡಿಕೊಳ್ಳುವುದು ಮತ್ತು ಪ್ರತಿ ಪಾಠ ಮತ್ತು ಪ್ರವಚನಗಳ ಮೂಲ ಅಂಶಗಳಿಗೆ ಸಂಬಂಧಪಟ್ಟಂತೆ ಪೂರಕ ಚಟುವಟಿಕೆಗಳಿಗೆ ತೊಡಗಿಸತಕ್ಕದ್ದು.
4.ಡಿಜಿಟಲ್ ತಂತ್ರಜ್ಞಾನದ ಮುಖಾಂತರ ಇತ್ತೀಚೆಗೆ ಡಿಜಿಟಲೀಕರಣಗೊಂಡಿರುವ ಭಾಷೆ ಕಲಿಕೆಯ ವಿಧಾನಗಳನ್ನು ಪಿಪಿಟಿ ಮತ್ತು ದೃಶ್ಯ ಮಾಧ್ಯಮದ ಮುಖಾಂತರ ಚರ್ಚಿಸಲು ಕ್ರಮ ಕೈಗೊಳ್ಳುವುದು. ಇದರಿಂದ ವಿದ್ಯಾರ್ಥಿಗಳನ್ನು ತರಗತಿಯಲ್ಲಿ ಹೆಚ್ಚು ಏಕಾಗ್ರತೆಯಿಂದ ಪಾಠ ಕೇಳಲು ಮತ್ತು ಅಧ್ಯಯನದಲ್ಲಿ ತೊಡಗಲು ಅನುಕೂಲವಾಗುತ್ತದೆ.
5.ಭಾಷಾ ಕಲಿಕೆಯ ಪ್ರಯೋಗಾಲಯದ ಮುಖಾಂತರ ಬಹುಬೇಗ ಕನ್ನಡ ಭಾಷೆಯನ್ನು ಕಲಿಯಲು ಅನುಕೂಲವಾಗುವಂತೆ ಕಾರ್ಯ ಚಟುವಟಿಕೆಗಳನ್ನು ಮತ್ತು ಕ್ರಿಯಾ ಯೋಜನೆಗಳನ್ನು ರೂಪಿಸುವುದು.

Module - 1	No. of Hrs
1.Introduction, Necessity of learning a local language. Methods to learn the Kannada language. 2.Easy learning of a Kannada Language: A few tips. Hints for correct and polite conservation, Listening and Speaking Activities, Key to Transcription 3.ವೈಯಕ್ತಿಕ, ಸ್ವಾಮ್ಯಸೂಚಕ /ಸಂಬಂಧಿತ ಸರ್ವನಾಮಗಳು ಮತ್ತು ಪ್ರಶ್ನಾರ್ಥಕ ಪದಗಳು-Personal Pronouns, Possessive Forms, Interrogative words	03
Module-2	No. of Hrs
1.ನಾಮಪದಗಳ ಸಂಬಂಧಾರ್ಥಕ ರೂಪಗಳು, ಸಂದೇಹಾಸ್ಪದ ಪ್ರಶ್ನೆಗಳನ್ನು ಮತ್ತು ಸಂಬಂಧವಾಚಕ ನಾಮಪದಗಳು-Possessive forms of nouns, dubitive question and Relative nouns 2.ಗುಣ, ಪರಿಮಾಣ ಮತ್ತು ವರ್ಣ ಬಣ್ಣ ವಿಶೇಷಣಗಳು, ಸಂಖ್ಯಾವಾಚಕಗಳು-Qualitative, Quantitative and Colour Adjectives, Numerals 3.ಕಾರಕ ರುಪಗಳು ಮತ್ತು ವಿಭಕ್ತಿ ಪ್ರತ್ಯಯಗಳು-ಸಪ್ತಮಿ ವಿಭಕ್ತಿ ಪ್ರತ್ಯಯ ಆ, ಅದು, ಅವು,	03

ಅಲ್ಲಿ)Predictive Forms, Locative Case	
Module - 3	No. of Hrs
1.ಚತುರ್ಥೀ ವಿಭಕ್ತಿ ಪ್ರತ್ಯಯದ ಬಳಕೆ ಮತ್ತು ಸಂಖ್ಯಾವಾಚಕಗಳು-Dative Cases, and Numerals 2.ಸಂಖ್ಯಾಗುಣವಾಚಕಗಳು ಮತ್ತು ಬಹುವಚನ ನಾಮರೂಪಗಳು-Ordinal numerals and Plural markers 3.ನ್ಯೂನ ನಿಷೇಧಾರ್ಥಕ ಕ್ರಿಯಾಪದಗಳು ವರ್ಣ ಗುಣವಾಚಕಗಳು-Defective/Negative Verbs & Colour Adjectives	03
Module - 4	No. of Hrs
1.ಅಪ್ಪಣೆ ಒಪ್ಪಿಗೆ, ನಿರ್ದೇಶನ, ಪ್ರೋತ್ಸಾಹ ಮತ್ತು ಒತ್ತಾಯ ಅರ್ಥರೂಪ ಪದಗಳು ಮತ್ತು ವಾಕ್ಯಗಳು-Permission, Commands, encouraging and Urging words (Imperative words and sentences) 2.ಸಾಮಾನ್ಯ ಸಂಭಾಷಣೆಗಳಲ್ಲಿ ದ್ವಿತೀಯ ವಿಭಕ್ತಿ ಪ್ರತ್ಯಯಗಳು ಮತ್ತು ಸಂಭವನೀಯ ಪ್ರಕಾರಗಳು-Accusative Cases and Potential Forms used in General Communication	03
Module - 5	No. of Hrs
1ಕಾಲ ಮತ್ತು ಸಮಯದ ಹಾಗೂ ಕ್ರಿಯಾ ಪದಗಳ ವಿವಿಧ ಪ್ರಕಾರಗಳು-Different types of Tense, Time and Verbs 2.ದ್ ತ್ ತು ಇತು ಆಗಿ ಅಲ್ಲ ಗ್ ಕ್ ಇದೆ, ಕ್ರಿಯಾ ಪ್ರತ್ಯಯಗಳೊಂದಿಗೆ ಭೂತ, ಭವಿಷ್ಯತ್ ಮತ್ತು ವರ್ತಮಾನ ಕಾಲ ವಾಕ್ಯರಚನೆ-Formation of Past, Future and Present Tense Sentences with Verb Forms	03

Course Outcomes:ಬಳಕೆ ಕನ್ನಡ ಪಠ್ಯಕಲಿಕೆಯಿಂದ ಆಗುವ ಅನುಕೂಲಗಳು ಮತ್ತು ಫಲಿತಾಂಶಗಳು At the end of the course, the students will be able to:	
CO1	To understand the necessity of learning of local language for comfortable life.
CO2	To speak, read and write Kannada language as per requirement.
CO3	To communicate (converse) in Kannada language in their daily life with kannada speakers.
CO4	To Listen and understand the Kannada language properly.
CO5	To speak in polite conservation.

University prescribed Text Books :
ಸಾಂಸ್ಕೃತಿಕ ಕನ್ನಡ
ಡಾ.ಹಿ. ಚಿ ಬೋರಲಿಂಗಯ್ಯ ಮತ್ತು ಡಾ. ಎಲ್ ತಿಮ್ಮೇಶ
ಪ್ರಕಟಣೆ : ಪ್ರಸಾರಾಂಗ,
ವಿಶ್ವೇಶ್ವರಯ್ಯ ತಾಂತ್ರಿಕ ವಿಶ್ವವಿದ್ಯಾಲಯ, ಬೆಳಗಾವಿ.
ಸೂಚನೆ:
1.ಹೆಚ್ಚಿನ ಮಾಹಿತಿ ಮತ್ತು ವಿವರಣೆಗಳಿಗೆ (9900832331) ಇವರನ್ನು ಸಂಪರ್ಕಿಸಿ.
2.ಮಾದರಿ ಪ್ರಶ್ನೆಪತ್ರಿಕೆ, ಕೋರ್ಸ್ ಆಯ್ಕೆ ಮಾಹಿತಿ, ಅಧ್ಯಯನ ಸಾಮಗ್ರಿ ಮತ್ತು ಬಹು ಆಯ್ಕೆ ಮಾದರಿಯ ಪ್ರಶ್ನೆಗಳ ಕೈಪಿಡಿಗಾಗಿ ವಿಶ್ವವಿದ್ಯಾಲಯದ ವೆಬ್ ಸೈಟ್ ನೋಡುವುದು.

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 Unit Tests each of 50 Marks (duration 01 hour). The pattern of the question paper is MCQ (multiple choice questions).

1st, 2nd, and 3rd tests shall be conducted after completion of the syllabus of 30-35%, 70-75%, and 100% of the course/s respectively. However best two tests out of three shall be taken into consideration.

Two assignments each of 10 Marks. The teacher has to plan the assignments and get them completed by the students well before the closing of the term so that marks entry in the examination portal shall be done in time.

Conducting Seminar for 10 Marks. The Teachers shall choose the types of assignments depending on the requirement of the course and plan to attain the Cos and POs.

Total Marks scored = Average of best two tests (30) + Two Assignments (10) + Seminar (10) = 50 Marks (maximum)

Semester End Examinations (SEE): SEE paper shall be set for 50 questions, each of the 01 mark. The pattern of the question paper is MCQ (multiple choice questions). The time allotted for SEE is 01 hour. The student must secure a minimum of 35% of the maximum marks for SEE.

Activity Based Learning (Suggested Activities in Class)/ Practical Based learning
- Contents related activities (Activity-based discussions)
- For active participation of students instruct the students to prepare Flowcharts and Handouts
- Organising Group wise discussions Connecting to placement activities
- Quizzes and Discussions, Seminars and assignments

Semester I/II				
Scientific Foundations of Health				
Category: AEC/SDC				
Common to All Branches				
(Theory)				
Course Code	:	**B24SFHK108/208**	CIE	:	50 Marks
Teaching Hours L : T : P	:	1:0:0	SEE	:	50 Marks
Total Hours	:	15	Total	:	100 Marks
Credits		1	SEE Duration	:	1 Hr

Course Objectives	
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

Teaching-Learning Process

These are sample Strategies, which teacher can use to accelerate the attainment of the various course outcomes and make Teaching –Learning more effective:

Teachers shall adopt suitable pedagogy for effective teaching - learning process. The pedagogy shall involve the combination of different methodologies which suit modern technological tools.

(i) Direct instructional method (Low/Old Technology), (ii) Flipped classrooms (High/advanced Technological tools),(iii) Blended learning (Combination of both), (iv) Enquiry and evaluation based learning, (v) Personalized learning, (vi) Problems based learning through discussion, (vii) Following the method of expeditionary learning Tools and techniques, (viii) Use of audio visual methods.

Apart from conventional lecture methods, various types of innovative teaching techniques through videos, animation films may be adapted so that the delivered lesson can progress the students In theoretical applied and practical skills.

Module - 1	**No. of Hrs**
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.	03
Module - 2	**No. of Hrs**
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.	03
Module - 3	**No. of Hrs**
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 a biology), Changing health behaviors through social engineering.	03
Module - 4	**No. of Hrs**
Avoiding risks and harmful habits : Characteristics of health compromising behaviours, Recognizing and avoiding of addictions, How addiction develops, Types of addictions, influencing factors of addictions, Differences between addictive people and non addictive people	03

& their behaviours. Effects of addictions Such as..., how to recovery from addictions.

Module - 5	No. of Hrs
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.	03

Course Outcomes: At the end of the course, the students will be able to	
CO1	To 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	To 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.

Text 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.

Reference Text Books	
1.	**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.
2.	**HEALTH PSYCHOLOGY (Ninth Edition)** by SHELLEY E. TAYLOR - University of California, Los Angeles, McGraw Hill Education (India) Private Limited - Open University Press.
3.	**SWAYAM / NPTL/ MOOCS/ We blinks/ Internet sources/ YouTube videos** and other materials / notes.
4.	**Scientific Foundations of Health (Health & Welness) - General Books** published for university and colleges references by popular authors and published by the reputed publisher.

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