K.K. Wagh Institute of Engineering Education and Research, Nashik

Curriculum

F.Y. B.Tech

Artificial Intelligence and Data Science

w.e.f.: AY 2023-2024

F.Y. B.Tech Artificial Intelligence and Data Science wef AY 2023-24														
SEM-I														
Course Code	**Couse Type**	**Title of Course**	**Teaching Scheme**			**Evaluation Scheme and Marks**						**Credits**			
			TH	**TU**	**PR**	**INSEM**	**ENDSEM**	**CCE**	**TUT /TW**	**PR /OR**	**TOTAL**	**TH**	**TU**	**PR**	**TOTAL**
2300101A	**BSC**	Linear Algebra	3	1	0	20	60	20	25	0	**125**	3	1	0	**4**
2300104A	**BSC**	Applied Chemistry	3	0	2	20	60	20	50	0	**150**	3	0	1	**4**
2300106A	**ESC**	Fundamentals of Electronics Engineering	3	0	2	20	60	20	50	0	**150**	3	0	1	**4**
2300108A	**ESC**	Programming in C	1	0	2	20	30	0	50	0	**100**	1	0	1	**2**
2300110A	**AEC**	Communication Skills	1	0	2	0	0	25	50	0	**75**	1	0	1	**2**
2300109D	**VSEC**	Workshop Practices	1	0	2	0	0	25	25	0	**50**	1	0	1	**2**
2300113A	**CC**	Arts and Sports	0	2	0	0	0	0	50		**50**	0	2	0	**2**
Total			**12**	**3**	**10**	**80**	**210**	**110**	**300**	**0**	**700**	**12**	**3**	**5**	**20**

SEM-II															
Course Code	**Couse Type**	**Title of Course**	**Teaching Scheme**			**Evaluation Scheme and Marks**						**Credits**			
			TH	**TU**	**PR**	**INSEM**	**ENDSEM**	**CCE**	**TUT /TW**	**PR /OR**	**TOTAL**	**TH**	**TU**	**PR**	**TOTAL**
2300102A	**BSC**	Differential Calculus	3	1	0	20	60	20	25	0	**125**	3	1	0	**4**
2300103A	**BSC**	Applied Physics	3	0	2	20	60	20	50	0	**150**	3	0	1	**4**
2300105A	**ESC**	Fundamentals of Electrical Engineering	3	0	2	20	60	20	50	0	**150**	3	0	1	**4**
2300107A	**ESC**	Engineering Drawing	1	0	2	20	30	0	50	0	**100**	1	0	1	**2**
2300116D	**PCC**	Computational Thinking and Problem Solving	2	0	0	20	60	20	0	0	**100**	2	0	0	**2**
2300114A	**IKS**	Indian Knowledge System	0	2	0	0	0	0	50	0	**50**	0	2	0	**2**
2300115A	**VSEC**	Python Programming	1	0	2	0	0	25	25	0	**50**	1	0	1	**2**
2300136A	**CC**	Engineering Exploration	0	2	0	0	0	0	75	0	**75**	0	2	0	**2**
Total			**13**	**5**	**8**	**100**	**270**	**105**	**325**	**0**	**800**	**13**	**5**	**4**	**22**

Department Specific Exit Courses (To award Certificate)															
Course Code	**Couse Type**	**Title of Course**	**Teaching Scheme**			**Evaluation Scheme and Marks**						**Credits**			
			TH	**TU**	**PR**	**INSEM**	**ENDSEM**	**CCE**	**TUT /TW**	**PR /OR**	**TOTAL**	**TH**	**TU**	**PR**	**TOTAL**
2300117A	**EXIT**	Internship*	0	0	0	0	0	0	100	0	**100**	0	2	0	**2**
2300118A	**EXIT**	Exit Course-1	2	0	2	20	30	0	50	0	**100**	2	1	0	**3**
2300119A	**EXIT**	Exit Course-2	2	0	2	20	30	0	50	0	**100**	2	1	0	**3**
Total			**4**	**0**	**4**	**40**	**60**	**0**	**200**	**0**	**300**	**4**	**4**	**0**	**8**

*Internship in industry for 2-weeks

→To get certificate student should get following credits

Internship →2 credits

Exit course-1 Web Designing using HTML & CSS →3 credits

Exit course-2 Web development using PHP and MYSQL →3 credits

Total credits →8 credits

OR

→To get certificate student should earn credits by completing following online courses

Exit course-1 Digital Freelancing (60Hrs Online Course) →4 credits
(https://klic.mkcl.org/digital-freelancing/digital-freelancing)

Exit course-2 SCRATCH (60Hrs Online Course) →4 credits
(https://klic.mkcl.org/new-collar-jobs/scratch)

Total credits →8 credits

K.K.Wagh Institute of Engineering Education and Research, Nashik
(Autonomous from Academic Year 2022-23)

F. Y. B. Tech.
Pattern 2023
2300101A: Linear Algebra

Teaching Scheme:	Credit Scheme:	Examination Scheme:
Theory :03hrs/week **Tutorial:01hr/week**	**03** **01**	**Continuous Comprehensive Evaluation: 20Marks** **InSem Exam: 20Marks** **EndSem Exam: 60Marks** **Tutorial / Termwork: 25Marks**

Prerequisite Courses: -

Course Objectives:
To introduce concepts of Matrices and system of linear Equations, linear and orthogonal transformations.
To introduce concepts of Eigen values and Eigen Vectors.
To introduce concepts of Partial Differentiation.
To introduce concepts of Jacobians, Maxima and Minima, errors and Approximations.
To introduce fundamental concepts of probability.
To introduce computational tools for solving mathematical problems.

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

	Course Outcomes	Bloom's Level
CO1	Interpret the concepts of Jacobians, rank, quadratic form, canonical form, transformations, Eigen values, Eigen vectors and probability.	2-Understanding
CO2	Solve problems on linear algebra, partial derivatives and probability.	3- Apply
CO3	Apply concepts of linear algebra, differential calculus and probability to engineering problems.	3- Apply
CO4	Use computational tools for solving mathematical problems.	3- Apply
CO5	Analyze the nature of quadratic forms, extreme values of the function, error and approximations.	4 -Analyze

COURSE CONTENTS

Unit I	Matrices and Linear System of Equations	(07hrs+2hrsTutorial)	COs Mapped - CO1, CO2, CO3

Rank of a matrix, system of linear Equations, Linear Dependence and Independence of vectors, Linear and orthogonal transformations, Application to system of linear equations.

Unit II	Eigen Values and Eigen Vectors	(08hrs+ 2hrsTutorial)	COs Mapped - CO1, CO2, CO3, CO5

Eigen values &Eigen vectors, diagonalization, quadratic forms and reduction of quadratic forms to canonical forms, applications of Eigen values and Eigenvectors.

Unit III	Partial Differentiation	(07hrs+ 2hrsTutorial)	COs Mapped –CO2, CO3
Introduction to functions of two or more variables, Partial Differentiation, Euler's Theorem on Homogeneous Functions, Partial differentiation of Composite and Implicit functions, Total derivatives.			
Unit IV	**Application of Partial Differentiation**	**(07hrs+ 2hrsTutorial)**	**COs Mapped - CO1, CO2, CO3, CO5**
Jacobians, Functional Dependence & Independence, Errors and Approximation, Maxima and Minima of Functions of two variables, Lagrange's method of undetermined multipliers.			
Unit V	**Introduction to Probability and Counting**	**(07hrs+ 2hrsTutorial)**	**COs Mapped - CO1, CO2, CO3**
Interpreting probabilities, Relative frequency and classical definition of probability, sample spaces and Events, mutually exclusive events, Permutations and Combinations, Axioms of probability, Addition rule, conditional probability, multiplication rule, Independent Events, Bayes' Theorem.			

TextBooks

1. B.V. Ramana, " Higher Engineering Mathematics", Tata McGraw-Hill.
2. B. S. Grewal, "Higher Engineering Mathematics", Khanna Publication, Delhi.

Reference Books

1. Erwin Kreyszig ,"Advanced Engineering Mathematics" ,Wiley Eastern Ltd.
2. P. N. Wartikar and J. N. Wartikar, "Applied Mathematics" (Volumes I and II), Pune Vidyarthi Griha Prakashan, Pune.

Strength of CO-PO Mapping

	PO											
	1	2	3	4	5	6	7	8	9	10	11	12
CO1	3	1	-	-	-	-	-	-	-	-	-	2
CO2	3	1	1	-	-	-	-	-	-	-	-	2
CO3	3	3	2	2	2	-	-	-	-	-	-	2
CO4	1	-	-	-	3	-	-	-	-	-	-	2
CO5	3	3	2	2	2	-	-	-	-	-	-	2

Guidelines for Continuous Comprehensive Evaluationof Theory Course		
Sr. No.	**Components for Continuous Comprehensive Evaluation**	**Marks Alloted**
1	Assignments (Total 3 Assignment, Unit I and II 20 marks, Unit III and IV 20 marks and Unit V 10 marks &50 marks will be converted to 10 Marks)	10
2	Tests on each unit using LearniCo (Each test for 15 M and total will be converted out of 10 M)	10

List of Tutorial Assignments		
Sr. No.	**Title**	**CO Mapped**
1	Examples on rank of a matrix, system of linear Equations	CO1, CO2
2	Examples on linear dependence and Independence of vectors, application to system of linear equations.	CO1, CO2, CO3
3	Examples on Eigen values & Eigen Vectors.	CO1, CO2, CO3
4	Examples quadratic forms to canonical forms.	CO1, CO2, CO3,CO5
5	Solve problems on matrices using Matlab.	CO1, CO2, CO4
6	Solve system of equations using Matlab.	CO1, CO2, CO4
7	Examples on partial differentiation, Euler's Theorem on homogeneous functions	CO2, CO3
8	Examples on partial differentiation of composite and implicit functions, total derivatives.	CO2, CO3
9	Examples on Jacobians, functional dependence & independence, errors and approximation	CO1, CO2, CO3 , CO5
10	Examples on maxima and minima of functions of two variables, Lagrange's method of undetermined multipliers.	CO1, CO2, CO3, CO5
11	Examples on fundamental concepts of probability.	CO1, CO2
12	Examples on conditional probability, Bayes' Theorem.	CO1, CO2, CO3

Guidelines for Tutorial / Termwork Assessment		
Sr. No.	**Components for Tutorial / Termwork Assessment**	**Marks Allotted**
1	Assignment on computational software	5
2	Tutorial (Each tutorial carries 15 marks)	15
3	Attendance (Above 95 % : 05 Marks, below 75% : 0 Marks)	5

K.K.Wagh Institute of Engineering Education and Research, Nashik
(Autonomous from Academic Year 2022-23)

F. Y. B. Tech.
Pattern 2023
2300104A:Applied Chemistry

Teaching Scheme:	Credit Scheme:	Examination Scheme:
Theory : 03hrs/week **Practical : 02hrs/week**	**03** **01**	**Continuous Comprehensive Evaluation: 20Marks** **InSem Exam: 20Marks** **EndSem Exam: 60Marks** **TermWork: 50Marks**

Prerequisite Courses, if any: -

Course Objectives:
To acquire the knowledge of electro-analytical techniques that facilitates rapid and precise understanding of materials.
To understand structure, properties and applications of speciality polymers, nano material and alloys.
To study conventional and alternative fuels with respect to their properties and applications
To understand technology involved in analysis and improving quality of water as commodity.
To understand corrosion mechanisms and preventive methods for corrosion control.

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

	Course Outcomes	Bloom's Level
CO1	Describe different techniques used for chemical entities present in fluids, fuel, polymer, alloys.	1-Knowledge
CO2	Select appropriate technology involved in determination of purity and properties of material.	2- Understand
CO3	Illustrate causes and preventive measures of ill effect of hard water and corrosion	3-Apply
CO4	Analyse the fluids, fuels and selection of appropriate purification methods.	3-Apply
CO5	Compare composition of fuels, purity of water and mitigation for corrosion control	4-Analyze

COURSE CONTENTS

Unit I	Cells, Batteries and Electro analytical Techniques	(8hrs)	CO1,CO4

Introduction: Dry cell, alkaline battery, Ni-Cd battery, H_2O_2 fuel cells, Lithium ion battery. Reference electrode (calomel electrode), ion selective electrode (combined glass electrode).
Conductometry: Introduction, conductometric titrations of acid versus base with titration curves (SA-SB).
pHmetry: Introduction, standardization of pH meter, pH metric titration of strong acid versus strong base with titration curve.
UV-Visible Spectroscopy: Introduction, interaction of electromagnetic radiation with matter, statement of Beer's law and Lambert's law, different electronic transitions, terms involved in UV-visible Spectroscopy.

Unit II	**Fuels**	**(8hrs)**	**CO1, CO4, CO5**

Introduction, classification, Calorific value (CV): Gross calorific value (GCV) and Net calorific value (NCV), Determination of Calorific value: Bomb calorimeter, Solid fuel: Coal: Analysis of Coal-Proximate and Ultimate analysis, Liquid fuel: Petroleum: Refining of petroleum, CNG, Hydrogen gas as a fuel. Alternative fuels: Power alcohol, biodiesel and Rocket propellants, Knocking in engines, octane number and cetane number.

Unit III	**Introduction to Engineering Materials**	**(8hrs)**	**CO1, CO2**

Solid: crystalline and amorphous solids, Polymorphism, unit cell, crystal system-cubic, APF. Metallurgy-Ores and Minerals, Alloys- classification. Composition, woods metal, brass, Bronze, Ti-alloys. Preparation of alloys by fusion and powder method. Introduction of polymer: Terms-Speciality polymers: Introduction, structure, properties and applications of the polymers:
1. Bio-degradable polymers: Poly (hydroxybutyrate-hydroxyvalanate),
2. Conducting and doped conducting Polymer: Polyacetylene
3.Polymer Composite,
Nanomaterials: Introduction, definition, classification of nanomaterials based on dimensions, properties and general applications.

Unit IV	**Analytical Aspects of Fluids**	**(8hrs)**	**CO1, CO2, CO3, CO4, CO5**

Properties of Fluids-Surface Tension, Capillary action , Viscosity, Vapour Pressure, Types of Fluid Liquid Fluid- Water and Oil
Water: hardness of water: Types, Determination of hardness by EDTA method, Chloride content in water by Mohr's method, Ill effects of hard water in boiler, External Treatment of water i) Zeolite method ii) Demineralization method. Purification of water: Reverse osmosis.
Oil: Aniline point, Flash Point, Fire point.
Gaseous fluids: Gas Sensors, Types of Gas sensors

Unit V	**Corrosion Science**	**(8hrs)**	**CO3, CO5**

Introduction, Types of corrosion – Dry and Wet corrosion, mechanism, nature of oxide films and Pilling-Bedworth's rule, hydrogen evolution and oxygen absorption, Factors influencing rate of corrosion. Methods of corrosion control: cathodic protection, Metallic coatings and its types, Galvanizing and Tinning, Electroplating, Powder coating.

Text Books

1. O .G. Palanna, "Engineering Chemistry", Tata Magraw Hill Education Pvt. Ltd.
2. Dr. S. S. Dara, Dr. S. S. Umare, "Textbook of Engineering Chemistry", S. Chand & Company Ltd.

Reference Books

1.Wiley Editorial, “Engineering Chemistry”, Wiley India Pvt.Ltd
2. Shriver and Atkins, “Inorganic Chemistry”, 5ed, Oxford University Press,
3. S. M. Khopkar, “Basic Concept of Analytical Chemistry”, 2ed, New Age-International Publisher

Strength of CO-PO Mapping												
	PO											
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
CO1	3	1	--	--	--	--	--	--	--	--	--	2
CO2	3	1	--	--	--	2	--	--	--	--	--	2
CO3	3	1	--	--	--	1	1	--	--	--	--	2
CO4	3	1	1	--	--	1	2	--	--	--	--	2
CO5	3	1	1	--	--	1	2	--	--	--	--	2

Guidelines for Continuous Comprehensive Evaluationof Theory Course		
Sr. No.	**Components for Continuous Comprehensive Evaluation**	**Marks Allotted**
1	Assignment on Unit 1 & 2	**05**
2	Group presentations on Unit 3/4/5	**10**
3	LearnCo test on each unit	**05**

List of Laboratory Experiments / Assignments		
Sr. No.	**Laboratory Experiments / Assignments**	**CO Mapped**
1	Daniel Cell	**CO1**
2	To determine strength of strong acid using conductometer.	**CO2**
3	To determine maximum wavelength of absorption and find unknown concentration of given sample by colorimeter.	**CO4**
4	Determine the calorific value of given solid fuel by using Bomb calorimeter.	**CO2**
5	Proximate analysis of coal.	**CO5**
6	To determine hardness of water by EDTA method	**CO4**
7	Estimation of chloride content by Mohr's method	**CO4**
8	Estimation of Cu from given brass alloy	**CO4**
9	ECE - To coat copper and zinc on iron plate using electroplating.	**CO1**
10	Preparation of nanomaterials.	**CO1**
11	Preparation of biodiesel from oil.	**CO1**
12	To determine alkalinity of water	**CO5**

Guidelines for Laboratory Conduction

1.Teacher will brief the given experiment to students its procedure, observations calculation, and outcome of this experiment.
2.Apparatus, chemicals, solutions and equipments required for given experiment will be provided by the lab assistants using SOP.
3.Students will perform the same experiment in a group (two students in each group) under the supervision of faculty and lab assistant. After performing the experiment students will check their readings, calculations from respective teacher.

Guidelines for Student's Lab Journal

Write-up should include title, aim, diagram, working principle, procedure, observations, graphs, calculations, conclusion and questions, if any.

Guidelines for Term work Assessment

Each experiment from lab journal is assessed for thirty marks based on three rubrics.
Rubric R-1 for timely completion, R-2 for understanding and R-3 for presentation/journal writing where each rubric carries ten marks.

K.K.Wagh Institute of Engineering Education and Research, Nashik
(Autonomous from Academic Year 2022-23)

F. Y. B. Tech.
Pattern 2023 Semester: I / II
2300107A: Fundamentals of Electronics Engineering
(Branch: Electrical, E&TC, R&A, Comp, AIDS, CSD, IT)

Teaching Scheme:	**Credit Scheme:**	**Examination Scheme:**
Theory :03hrs/week **Practical : 02hrs/week**	**03** **01**	**Continuous Comprehensive Evaluation: 20Marks** **InSem Exam: 20Marks** **EndSem Exam: 60Marks** **TermWork: 50Marks**

Prerequisite Courses, if any: Semiconductor Theory, Mathematics

Course Objectives:

1. To study basic electronic components like PN junction diode, Zener diode, LED, Photodiode, BJT, E-MOSFET and OpAmp along with their applications.
2. To understand different number systems, logic gates, Boolean algebra and basic digital circuits.
3. To study the basics of electronic communication system and mobile communication system.

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

	Course Outcomes	**Bloom's Level**
CO1	Describe the working of semiconductor diodes, transistors and OpAmp.	2- Understand
CO2	Explain the basics of number systems, logic gates, Boolean algebra, electronic communication system, AM, FM, cellular concepts and GSM system.	2- Understand
CO3	Apply the knowledge of semiconductor diodes, transistors and OpAmp in realization of basic analog circuits.	3-Apply
CO4	Apply the knowledge of number systems, logic gates and Boolean algebra in realization of basic digital circuits.	3-Apply
CO5	Analyze the basic analog and digital application circuits.	4-Analyze

COURSE CONTENTS

Unit I	**Semiconductor Diodes**	**(08hrs)**	**COs Mapped CO1, CO3, CO5**

PN Junction Diode: Construction, Working and VI Characteristics
Rectifiers: Working and Parameters of Half Wave Rectifier and Full Wave Rectifiers
Working of Bridge Rectifier with Capacitor Filter
Zener Diode: Working, VI Characteristics, Breakdown Mechanisms, Zener Diode as Voltage Regulator
LED and Photodiode: Working, Characteristics and Applications

Unit II	**Transistors**	**(08hrs)**	**COs Mapped - CO1, CO3, CO5**

Transistors: Introduction and Types
BJT: Construction, Types and Regions of Operations, CB and CE configurations with their characteristics and current relationships, BJT as Switch, DC Load Line, Voltage Divider Bias Circuit, Single Stage CE Amplifier
Enhancement MOSFET: Types, Construction, Operation and Characteristics

Unit III	**Linear Integrated Circuits**	**(08hrs)**	**COs Mapped - CO1, CO3, CO5**

Introduction to OpAmp, Ideal Differential Amplifier, OpAmp Parameters, Introduction to Open Loop and Closed Loop OpAmp Configurations, Applications of OpAmp: Comparator, Inverting Amplifier, Non-Inverting Amplifier, Voltage Follower and Summing Amplifier.

Unit IV	**Digital Electronics**	**(08hrs)**	**COs Mapped - CO2, CO4, CO5**

Binary, Octal, Decimal, Hexadecimal, their conversion, Binary Arithmetic, Logic Gates, Boolean Laws, De Morgan's Theorem, Half Adder, Full Adder, Flip Flops: SR, JK, D and T

Unit V	**Electronic Communication Systems**	**(08hrs)**	**COs Mapped - CO2**

Block Diagram of Communication System, Communication Media: Wired and Wireless, Modes of Transmission, Electromagnetic Spectrum, Modulation and It's Need, AM and FM: Definition, Modulation Index and Bandwidth, Mobile Communication System: Cellular Concept and Block Diagram of GSM System

Text Books

1. Thomas. L. Floyd, "Electronics Devices", 9th Edition, Pearson
2. R. P. Jain, "Modern Digital Electronics" , 4th Edition, Tata McGraw Hill
3. George Kennedy, "Electronic Communication Systems", 5th Edition, Tata McGraw Hill

Reference Books

1. Paul Horowitz, "The Art of Electronics", 3rdEdition, Cambridge University Press
2. Theodore S. Rappaport , "Wireless Communications: Principles and Practice", 2ndEdition,Pearson

Strength of CO-PO Mapping												
	PO											
	1	2	3	4	5	6	7	8	9	10	11	12
CO1	3	-	-	-	2	-	-	-	-	-	-	-
CO2	3	-	-	-	2	-	-	-	-	-	-	-
CO3	3	2	-	-	2	-	-	-	-	-	-	-
CO4	3	2	-	-	2	-	-	-	-	-	-	-
CO5	-	2	-	-	-	-	-	-	-	-	-	-

Guidelines for Continuous Comprehensive Evaluationof Theory Course		
Sr. No.	**Components forContinuous Comprehensive Evaluation**	**Marks Allotted**
1	**Assignment:** Assignment No. 1 - Unit 1, 2 (10 Marks) Assignment No. 2 - Unit 3, 4, 5 (10 Marks)	**10**
2	**Quiz (Using Learnico):** Unit No. 1 (10 Questions - 10 Marks) Unit No. 2 (10 Questions - 10 Marks)	**10**

	Unit No. 3 (10 Questions - 10 Marks) Unit No. 4 (10 Questions - 10 Marks) Unit No. 5 (10 Questions - 10 Marks)	

List of Laboratory Experiments / Assignments		
Sr. No.	**Laboratory Experiments / Assignments**	**CO Mapped**
1	Build and demonstrate appropriate AC to DC converter for Mobile charger. How to rectify the fault, if the output of your circuit reduces to half of the required value?	**CO3, CO5**
2	Build and demonstrate a circuit to superimpose analog signal with DC signal. Hint: Television system.	**CO3, CO5**
3	Build and demonstrate basic charging circuit for battery of an electric vehicle.	**CO3, CO5**
4	Build and demonstrate a simple circuit to control the flashing speed of LEDs used in decorative lighting system.	**CO3, CO5**
5	Build and demonstrate simple circuit that will convert sine waveform into square waveform.	**CO3, CO5**
6	Build and demonstrate a simple circuit that will turn off a water pump automatically when the water tank is full.	**CO3, CO5**
7	Build and demonstrate the simple PUC system which will show green light indication if all CO_2, SO_2, Carbon monoxide levels are less than threshold value otherwise it should show red light indication. Hint: MQ series sensors along with comparators cane be used	**CO4, CO5**
8	Suggest a simple electronic system for a hearing-impairedperson. (Implementation is not expected)	**CO3, CO4, CO5**
9	Suggest a simple system to transmit your voice signal from a recording room in Nashik to a broadcasting station in Mumbai. (Implementation is not expected)	**CO3, CO4, CO5**

Guidelines for Laboratory Conduction

1. Experiments should be performed in a group of two students only.
2. Avoid contacting circuits with wet hands or wet materials.
3. Double check circuits for proper connections and polarity prior to applying the power.
4. Observe polarity when connecting polarized components or test equipment.
5. Makesuretestinstrumentsaresetforproperfunctionand rangepriortotakingameasurement.

Guidelines for Student's Lab Journal

Student's lab journal should contain following related things -
Title, Objectives, Hardware/ Software requirement, Theory, Circuit Diagram, Observation table, Graph, Calculations, Results, Conclusion and Assignment questions

Guidelines for Termwork Assessment

1. R1: Timely completion of experiment (10 Marks)
2. R2: Understanding of experiment (10 Marks)
3. R3: Presentation / clarity of journal writing (10 Marks)
4. Total 30 marks for each experiment and average marks of all experiments will be converted into 25 marks of term work.

K. K. Wagh Institute of Engineering Education and Research, Nashik
(Autonomous from Academic Year 2022-23)

F. Y. B. Tech.
Pattern 2023 Semester: I
FYE2300108A: Programming in C

Teaching Scheme:	Credit Scheme:	Examination Scheme:
Theory : 01hrs/week **Practical : 02hrs/week**	**01** **01**	**InSem Exam: 20Marks** **EndSem Exam: 30Marks** **Termwork: 50 Marks**

Prerequisite Courses, if any: -

Course Objectives:

- To get acquainted with the fundamental concepts of 'C'programming
- To understand data types, control structures and functions in 'C'
- To use concept of arrays, string operations in C to solve a problem
- To apply the concept of structures in 'C' to solve a problem
- To build the programming skills using 'C' to solve a problem

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

	Course Outcomes	Bloom's Level
CO1	Illustrate the concepts of Computational thinking, algorithm flowchart and errors for a given problem	2-Understand
CO2	Apply fundamentals of 'C' programming and Conditional Algorithmic Constructs to solve a given problem	3-Apply
CO3	Build a solution for a given problem using iterative algorithmic constructs and arrays.	3-Apply
CO4	Use functions in developing programs	3-Apply
CO5	Develop programs using a structure	3-Apply

COURSE CONTENTS

Unit I	Introduction to Programming Languages	03 hrs	COs Mapped –CO1

Computational Thinking (CT): What is CT? Purpose of CT, Logical Thinking, CT and Problem Solving Strategies.
Program planning tools- Algorithm, flowchart and pseudo code, Introduction to top-down structured programming.
Types of Program Errors: Syntax, logical, runtime, debugging.

Unit II	Fundamentals of 'C' Programming and Conditional Algorithmic Constructs	04 hrs	COs Mapped –CO2

Introduction to 'C' Programming: Identifiers, Data Types, Variables, Constants, Input / Output, Operators (Arithmetic, relational, logical, bitwise), Expressions, Precedence and Associatively, Type conversions.
Conditional algorithmic constructs - if, if-else, nested if-else, cascaded if-else and switch statement.

Unit III	Iterative Algorithmic Constructs and Arrays	04 hrs	COs Mapped –CO3
Iterative algorithm constructs: Construction of loops, Establishing initial condition, 'for', 'while', 'do-while' statements, nested loops, Continue, break statements. **Arrays:** Concept, One- dimensional, multidimensional array.			
Unit IV	**Functions**	**02 hrs**	**COs Mapped –CO4**
Function types: Library functions (math, string), user-define functions: Function definition, function declaration, arguments, function calls and return.			
Unit V	**Structure**	**02 hrs**	**COs Mapped –CO5**
Defining a structure, accessing members, and structure initialization. arrays of structures			

Text Books

1. Yashavant Kanetkar, "Let Us C" – Seventh Edition, BPB Publications, 2007
2. E. Balagurusamy, "Programming in ANSI C", Tata McGraw Hill, 2002
3. Karl Beecher, "Computational Thinking, A Beginner's guide to Problem solving and Programming", BCS Learning & Development Ltd, 2017

Reference Books

1. Brian W. Kernighan and Dennis M. Ritchie, "The C Programming Language", Pearson Education, 1988
2. Computer Science: A Structured Programming Approach Using C, B. A. Forouzan and R.F. Gilberg, Third Edition, Cengage Learning.

Strength of CO-PO Mapping

Course Outcomes	PO											
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
CO1	3	3	3	-	-	-	-	-	-	-	-	3
CO2	3	3	3	-	-	-	-	-	-	-	-	3
CO3	3	3	3	-	-	-	-	-	-	-	-	3
CO4	3	3	3	-	-	-	-	-	-	-	-	3
CO5	3	3	3	-	-	-	-	-	-	-	-	3

List of Laboratory Experiments / Assignments		
Sr. No.	**Laboratory Experiments / Assignments**	**CO Mapped**
1	In a departmental store, a customer is offered an x% discount on the printed price of each commodity. The customer needs to pay y% sales tax on the discounted amount. Draw a flowchart, write an algorithm / a pseudo-code and write a C program to calculate the amount to be paid by the customer for a commodity using above conditions.	**CO1,CO2**
2	A type of a triangle (equilateral, isosceles, right angle triangle etc) is decided using the length of its three sides. Draw a flowchart, write an algorithm /write a pseudo-code and write a C program to accept the length of three sides of a triangle and display the type of triangle. Also Calculate its area and perimeter.	**CO1,CO2**
3	After conducting a class test for a course, a teacher wants to record the marks obtained by all the students in the class and find the Minimum and Maximum score obtained. The teacher is also interested in knowing the number of students who passed in this test Draw a flowchart, write an algorithm/ a pseudo-code and write a C program to record the marks and perform above functions.	**CO1,CO2, CO3.**
4	Draw a flowchart/write an algorithm / a pseudo-code and write a menu driven C program to perform following string operations using library and user defined function: i. Find length of a string ii. Copy a string iii. Concatenate the string iv. Compare two strings	**CO1,CO2, CO3,CO4**
5	Draw a flowchart/write an algorithm / a pseudo-code and write a C program using functions to perform the following operations: i. Addition of Two Matrices ii. Multiplication of Two Matrices iii. Transpose of a given matrix	**CO1,CO2, CO3,CO4**
6	Draw a flowchart, write an algorithm / a pseudo-code and write a C program using a function to test whether the given number is a prime number and also to find smallest divisor, GCD, LCM of the given number	**CO1,CO2, CO3,CO4**
7	A company desires to maintain a database of its customer by recording information about customers such as name, mobile, gender, city etc. The sales department personnel would like to get i. Customers with all the details, ii. Customers and their mobile numbers, iii. Customers from a given city Draw a flow-chart, write an algorithm / a pseudo-code and develop a menu driven application to provide above functionalities	**CO1,CO2, CO3,CO4, CO5**

Guidelines for Laboratory Conduction
Use coding standards such as variable naming conventions, use of constants, proper indentation, comments and documentation For each assignment, students should write number of lines of code, various errors encountered and test cases used to test the program Students should incorporate functionalities mentioned in boldface in the assignments In addition to above eight assignments, students may develop an application in consultation with the teacher
Guidelines for Student's Lab Journal
The laboratory assignments are to be submitted by students in the form of a journal. Journal consists of Certificate, table of contents, and handwritten write-up of each assignment (Title, problem statement, theory concepts in brief, algorithm, flowchart, test cases and conclusions). Program codes with sample outputs shall be submitted in soft form.
Guidelines for Term work Assessment
Continuous assessment of laboratory work shall be based on the overall performance of a student. Assessment of each laboratory assignment shall be based on rubrics that include R1- Timely completion (10) – Full marks if submitted in time, 5 marks otherwise, R2- Understanding of assignment (10) Full marks for accurate flowchart, algorithm / pseudo-code and working code R3- Use Coding standards, proper documentation, neatness of writeup (10) – 5 marks for coding standards and documentation and 5 marks for neatness of write up.

K.K.Wagh Institute of Engineering Education and Research, Nashik
(Autonomous from Academic Year 2022-23)

F. Y. B. Tech.
Pattern 2023
2300112A: Communication Skills

Teaching Scheme:	**Credit Scheme:**	**Examination Scheme:**
Theory: 01hr/week **Practical: 02hrs/week**	**01** **01**	**Continuous Comprehensive Evaluation: 25Marks** **Termwork: 50Marks**

Prerequisite Courses, if any: ----

Course Objectives:

1. To highlight the need to improve soft skills among engineering students so as to become good professionals.
2. To facilitate a holistic development of students by enhancing soft skills.
3. To develop and nurture the soft skills of the students through individual and group activities.
4. To expose students to right attitudinal and behavioural aspects and assist in building the same through activities.

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

	Course Outcomes	**Bloom's Level**
CO1	Develop effective communication skills including Listening, Reading, Writing and Speaking	**3-Apply**
CO2	Practice professional etiquette and present oneself confidently.	**3-Apply**
CO3	Function effectively in heterogeneous teams through the knowledge of team work, Inter-personal relationships, conflict management and leadership quality.	**3-Apply**
CO4	Evaluate oneself by performing SWOC Analysis to introspect about individual's goals and aspirations.	**4-Evaluate**
CO5	Constructively participate in group discussion, meetings and prepare and deliver Presentations.	**4-Evaluate**

Text Books

1. Gajendra Singh Chauhan, Sangeeta Sharma,"Soft Skills – An Integrated Approach to Maximize Personality", Wiley India, ISBN:13:9788126556397
2. Simon Sweeney, "English for Business Communication", Cambridge University Press, ISBN 13:978- 0521754507

Reference Books

1. Indrajit Bhattacharya, "An Approach to Communication Skills", Delhi, DhanpatRai, 2008
2. Sanjay Kumar and PushpaLata, "Communication Skills", Oxford University Press, ISBN 10:9780199457069
3. Business Communication & Soft Skills, McGraw Hill Education.
4. Atkinson and Hilgard, "Introduction to Psychology", 14th Edition, Geoffrey Loftus, ISBN-10:0155050699, 2003.
5. Kenneth G. Mcgee, "Heads Up: How to Anticipate Business Surprises & Seize Opportunities First", Harvard Business School Press, Boston, Massachusetts, 2004, ISBN 10:1591392993
6. Krishnaswami, N. and Sriraman T., "Creative English for Communication," Macmillan

Strength of CO-PO Mapping												
	PO											
	1	2	3	4	5	6	7	8	9	10	11	12
CO1	-	-	-	-	-	-	-	-	3	3	-	-
CO2	-	-	-	-	-	-	-	-	3	3	-	-
CO3	-	-	-	-	-	-	-	-	3	3	-	-
CO4	-	-	-	-	-	-	-	-	3	3	-	-
CO5	-	-	-	-	-	-	-	-	3	3	-	-

List of Laboratory Experiments / Class Assignments		
Sr. No.	**Laboratory Experiments / Class Assignments**	**COs Mapped**
1	**English Language Basics – Class Assignments** Fundamentals of English grammar, Vocabulary Building, Developing basic writing skills and Identifying Common Errors in Writing	**CO1**
2	**Listening and Reading Skills** **a. Listening Worksheets using Language Lab Software** Each student will be given specifically designed worksheets that contain blanks / matching / MCQs that are designed to an audio (chosen by the faculty). Students have to listen to the audio (only once) and complete the worksheet as the audio plays. This will help reiterate active listening as well as deriving information (listening to information between the lines) **b.** Reading Comprehension Worksheets to be distributed/displayed to students. – **Class Assignments** Teacher will choose reading passages from non-technical domains, design worksheets with questions for students to answer. This will enhance student's reading skills by learning how to skim and scan for information.	**CO1**
3	**Writing Skills** **a. Letter / Email Writing – Lab Experiment** After explaining to the students the highlights of effective writing, students can be asked to write (using digital platforms / paper-based) letter to an organization with the following subject matter, **i.** Requesting opportunity to present his/her product. **ii.** Complaining about a faulty product / service. **iii.** Apologizing on behalf of one's team for the error that occurred. **iv.** Providing explanation for a false accusation by a client. **b.** Abstract Writing – **Class Assignment** Teacher will choose a newspaper article / short stories and ask students to write an abstract.	**CO1**
4	**Speaking Skills / Oral Communication – Part A** **a. One minute Self Introduction – Class Assignment** Explain how to introduce oneself in a professional manner and presenting oneself positively Name, Academic Profile, Achievements, Career Aspirations, Personal Information (hobbies, family, social). **b. Presentations – Lab Experiment** Every student will have to choose a topic of his/her choice and make a 5-minute presentation using audio-video aids / PPT. Every student will make two presentations on – one technical and other non-technical topic. Focus and evaluation of each presentation should be the depth of knowledge about the topic, originality of perspective on the topic, well-researched or not, verbal and non-	**CO5, CO2**

	verbal skills and ability to answer questions effectively. Plagiarism should be discredit and students should be instructed about it.	
5	**Speaking Skills / Oral Communication – Part B** **a. Group Discussion – Lab Experiment / Class Assignment** The class will be divided into groups of 5-6 students for a discussion lasting 15 minutes. Topics should be provided by teachers. After each group finishes its discussion, the teacher will give critical feedback including areas of improvement. The teacher should act as a moderator / observer only	**CO1, CO5, CO2, CO3**
6	**Extempore** Various topics will be laid out in front of the audience and each student is to pick one topic and speak about the topic for 5 minutes followed by Q&A from audience. Teacher will evaluate each student based on thinking ability, content, communication skills, logical and cohesive presentation of topic, perspective of student, ability to handle questions and respond positively	**CO1, CO2**
7	**SWOC Analysis** **a.** Focus on introspection and become aware of one's Strengths, Weakness, Opportunities and Challenges. Students can write down their SWOC in a matrix and the teacher can discuss the gist personally. **b.Resume Writing** The teacher should conduct a brief session outlining the importance of a CV / Resume and students can write / type out their own resumes i. Share various professional formats. ii. Focus on highlighting individual strengths. iii. Develop personalized professional goals / statement at the beginning of the resume.	**CO4**

Guidelines for Laboratory Conduction

The teacher may design specific assignments that can highlight the learning outcomes of each unit. Each activity conducted in the lab should begin with a brief introduction of the topic, purpose of the activity from a professional point of view and end with the learning outcomes as feedback from students. Most of the lab sessions can be designed to be inclusive; allowing students to learn skills experientially; which will benefit them in the professional environment. Every student must be given sufficient opportunity to participate in each activity and constructive feedback from the instructor / facilitator at the end of the activity should learn towards encouraging students to work on improving their skills. Activities should be designed to respect cultural, emotional and social standing of students. Some of the activities can be designed to cater to enhancement of multiple skills – e.g. Team Building Activity can highlight 'open communication', 'group discussion', 'respecting perspectives', 'leadership skills', 'focus on goals' which can help students improve their inherent interpersonal skills.

At least one session should be dedicated to an interactive session that will be delivered by an expert from the industry; giving the students an exposure to professional expectations.

Guidelines for Student's Lab Journal

Each student should have a Lab Workbook (sample workbook attached) which outlines each lab activity conducted. The student must respond by writing out their learning outcomes and elaborating the activities performed in the lab., group discussion, group exercises and interpersonal skills and similar other activities/assignments.

Guidelines for Termwork Assessment

Continuous assessment of laboratory work is to be done based on overall performance and lab assignments and performance of student. Each lab assignment assessment will be assigned grade/marks based on parameters with appropriate weightage. Suggested parameters for overall assessment as well as each lab assignment assessment include- timely completion, performance, punctuality, neatness, enthusiasm, participation and contribution in various activities-SWOC analysis, presentations, team activity, event management

K.K.Wagh Institute of Engineering Education and Research, Nashik.
(Autonomous from Academic Year 2022-23)

F.Y.B.Tech. **Pattern 2022** **2300111A:WorkshopPractice**		
TeachingScheme:	**CreditScheme:**	**ExaminationScheme:**
Lecture:01 hrs/week **Practical:02hrs/week**	**01** **01**	**Continuous Comprehensive Evaluation :25** **Term work:25Marks**

CourseObjectives:
Toacquirethebasicknowledgeoffundamentals MachineTools.Toinculcate thebasicsofvarious manufacturingprocesses.
ToimpartpracticalaspectsofMachineToolsandManufacturingprocessesusedinindustrialapplications
Todeveloptheskillthroughhands-onpracticesusinghandtools,powertools,machinetoolsinmanufacturingand assemblyshop

CourseOutcomes: Oncompletionofthecourse,studentswill beable to–

	CourseOutcomes	**Bloom'sLevel**
CO1	Selectappropriatemachineandcuttingtoolsfora given application	1-Remember
CO2	Describetheprocess and programmingmethodsfor CNCmachines and3Dprinting	2-Understand
CO3	Applythe basicknowledgeofShop FloorSafety,Machinetools and Manufacturingprocesses.	3-Apply
CO4	Fabricatethesimplemechanicalparts	3-Apply

COURSECONTENTS			
Unit I	**Workshop Safety andMaintenance**	**(2hrs)**	**COsMapped-**CO3

a. Introduction to Workshop Safety: Introduction to workshop safety norms and guidelines. Identifyingpotential hazards in a workshop. Proper usage of personal protective equipment (PPE). Safety guidelines forhandlingvarioustoolsandequipment. Emergencyprocedures and firstaidbasics.
b. Workshop Maintenance and Housekeeping : Importance of workshop maintenance and cleanliness.Regularmaintenanceoftoolsandequipment.Workshoplayoutandorganizationforefficientworkflow.Properstorageoftools and materials to ensurelongevity.

Unit II	**Measurement and Introduction toWelding**	**(2hrs)**	**COs Mapped-CO2**

a. Measurement and Metrology: Importance of accurate measurement in workshop practice. Variousmeasuring tools and their uses –varnier calipers, micrometers, rulers, etc. Metrology and its role in qualitycontrol.Understandingmeasurementunits andconversions.
b. Introduction to Welding Shop: Overview of Welding Shop and its applications. Understanding the arcweldingprocessanditsprinciples.Safetyprecautionsforweldingoperations.Demonstrationofsimplewelding tasks.

Unit III	MachineTools	(2hrs)	COs Mapped- CO1,CO2
a. Demonstration of Conventional Machine Tools: Introduction to Lathe and its components. UnderstandingtheMillingMachineanditsoperations.PracticalapplicationsofLatheandMillingMachinein different industries.Safetyguidelineswhileoperatingconventional machinetools.			
b. Introduction to CNC Machine Tools: Understanding CNC (Computer Numerical Control) technology.Types of CNC machines - CNC turning, VMC (Vertical Machining Center), and plasma arc machining, CNCwoodrouter,etc.Detaileddemonstrationofanyone CNCprocess,includingaprogrammingassignment.Safety considerationsspecifictoCNCmachineoperations.			
UnitIV	**Introductionto3DPrinting**	**(2hrs)**	**COs Mapped- CO2**
a. 3DPrinting:Overviewof3Dprintingtechnologyanditsapplications.Step-by-stepprocessof3Dprinting,from design to printing. Software used in 3D printing - creating a design, exporting STL file, choosingparameters,andgeneratingGcode.Safetymeasures whilehandling3Dprintingequipment andmaterials. **b. MaterialsandTheirProperties:**Overviewofcommonworkshopmaterials-metals,wood,andplastics. Physical and mechanical properties of materials. Material selection criteria for specific projects. Recycling andsustainablepracticesin theworkshop.			
Unit V	**Workshop Projects, Problem-SolvingandTroubleshooting**	**(02hrs)**	**COs Mapped –CO4**
a. IntroductiontoWorkshopProjects: Planningandexecutingworkshopprojects.Understandingproj ectrequirements and specifications. Breakdown of complex tasks into smaller achievable steps. Importance ofteamworkand collaboration in workshopprojects. **b. Problem-Solving and Troubleshooting:** Approaches to problem-solving in workshop scenarios. Commonissuesandchallengesinworkshoppractice.Troubleshootingtechniquesfortoolsandequipment.En couragingaproactiveapproachto tackle workshop-related problems.			

ListofLaboratoryExperiments/Assignments		
Sr. No.	**LaboratoryExperiments/Assignments**	**COs Mapped**
1	**Workshopsafety** Introductiontoworkshopfacilities,workshopsafetynorms.	**CO3**
2	**Fittingshop** Preparationofsimplefittingjobhavingsawing,filing,drilling,tappingoperations using different tools/equipments such as files, hammers, drills &taps,etc.	**CO4**
3	**TinSmithyshop** Preparation of simple sheet metal job having shearing, bending and joiningoperations using different tools/equipments such as hammers, mallet, stakeblock,snip, etc. needed forit.	**CO4**

4	**CarpentryShop** Preparationofsimplewoodenjobhavingmarking,sawing,planning,chiselingoperations usingdifferenttools/equipmentssuchassaws,Jackplane,chisel, hammer, mallet etc. neededforit.	**CO4**
5	**WeldingShop** Demonstrationofsimpleweldingjob usingarcweldingprocess.	**CO1**
6	**DemonstrationofconventionalmachineTools** DemonstrationofconventionalmachineTools:LatheandMillingmachine	**CO1**
7	**DemonstrationofCNCmachineTools** Introduction to CNC turning, VMC, plasma arc machining, Laser cutting,CNCwoodrouter.Detaildemonstrationofanyoneprocesswithoneprogramming assignment.	**CO2**
8	**Demonstrationof3Dprinting** Demonstrationofbasicstepsof3Dprintingsuchascreatingadesign,	**CO2**
	exportingSTLfile, choosingparameters,creating Gcodeand printing	

GuidelinesforLaboratoryConduction

1. Importanceofworkshoppracticalandshopfloorsafetynormsshouldbeemphasizedinthefirstpracticalsession.
2. Studentsshoulddeveloponeproduct/prototypeinvolvingoperations fromPractical2to5.
3. Instructorshoulddemonstratedetailed workingofweldingandmachine tools.
4. Instructorshoulddemonstrateoneprogrammingassignment on3D printingandCNCmachine.

GuidelinesforStudent'sLabJournal

1. Prepare work diary based on practical performed in workshop. Work diary consists of job drawing,operations to be performed, required raw materials, tools, equipments, date of performance withinstructorsignature.
2. Student has to maintain one file for write ups based on safety norms and illustrations/sketches ofdemonstratedparts/mechanisms/machine tools etc.

GuidelinesforTermwork Assessment

Termworkassessmentshallbebasedonthetimelycompletionofjobs,qualityofjob,skillacquired, completionofworkshopdiaryandbriefwrite-ups.

StrengthofCO-POMapping

	PO											
	1	2	3	4	5	6	7	8	9	10	11	12
CO1	2	-	-	-	-	-	-	-	1	-	1	1
CO2	2	-	-	-	1	-	-	-	1	1	-	1
CO3	2	-	-	-	-	1	-	-	1	-	-	1
CO4	2	-	-	-	-	-	-	1	1	1	-	1

TextBooks

1. S. K. HajraChoudhary, Nirjhar Roy, "Element of Workshop Technology: Vol.1 and 2", MediaPromotersandPublishers Pvt.Ltd., 15th Edition, 2012
2. H.S.Bawa,"WorkshopPractice",TataMcGrawHillEducation(Publisher)

ReferenceBooks

1. John,K.C.,"MechanicalWorkshopPractice", PrenticeHallPublication,NewDelhi
2. MikellP.Groover,"IntroductiontoManufacturingProcesses",WileyPublications

K.K.Wagh Institute of Engineering Education and Research, Nashik
(Autonomous from Academic Year 2022-23)

F. Y. B. Tech. (All Branches)
Pattern 2023
FYE2300113A: Arts and Sports

Teaching Scheme:	**Credit Scheme:**	**Examination Scheme:**
Tutorial: 02 hrs/Week	**02**	**Termwork: 50Marks**

Course Objectives:
To introduce co-curricular activities for holistic development of student

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

	Course Outcomes	**Bloom's Level**
CO1	Write critics about books& films and understand the problems of rural india.	2-Understand
CO2	Present the knowledge gained by all coo curricular activities.	4- Analyze 5-Evaluate
CO3	Perform Yoga and play different sports of his own development.	3. Apply

COURSE CONTENTS

Assignment 01	**Review of book**	**(6hrs)**	**COs mapped-CO1**

1. Select a book you like (non technical)
2. Read book at home
3. Write a critics about the book
4. Share it into class for 5min

Evaluation will be based on
1. Critics document—10Marks
2. Sharing experience—10Marks

Assignment 02	**Review of Film**	**(6 hrs)**	**COs mapped-CO1**

1. Select a movie with good message to society.
2. See the movie at home
3. Write a critics about the book
4. Share it into class for 5min

Evaluation will be based on
1. Critics document—10Marks
2. Sharing experience—10Marks

Assignment 03	**Assessment of Problem of Rural India**	**8hrs)**	**COs mapped-CO4**

1. Select a village you like as far as remote village or rural school (group of 6 to 7)
2. Visit to that place for one day
3. Take interview of people at villages for their problem.
4. Make a document of it with possible remedial action.
5. Share it into class

Evaluations will be based on
1. Document of problems of rural India—10Marks
2. Remedial suggestions---10 Marks

Assignment 04	**Yoga and Sports**	**(8hrs)**	**COs mapped- CO2, CO3**
1. Get the knowledge about Yoga 2. Participate the Yoga training at institute 3. Perform it daily 1. Physical Education session at ground 2. Introduction of sports to students Evaluation will be based on 1. Attending Yoga session of 4 Hours in semester—20 Marks 2. Physical education test—10 Marks 3. Attending 4 hour session of sports—10 Marks			

Term work Assessment:

1.	Assignment 01	10 Marks
2.	Assignment 02	10 Marks
3.	Assignment 03	10 Marks
4.	Assignment 04	20 Marks

K.K.Wagh Institute of Engineering Education and Research, Nashik
(Autonomous from Academic Year 2022-23)

F. Y. B. Tech.
Pattern 2023
2300102A: Differential Calculus

Teaching Scheme:	**Credit Scheme:**	**Examination Scheme:**
Theory : 03hrs/week **Tutorial: 01hr/week**	**03** **01**	**Continuous Comprehensive Evaluation: 20Marks** **InSem Exam: 20Marks** **EndSem Exam: 60Marks** **Tutorial / TermWork: 25Marks**

Prerequisite Courses: -

Course Objectives:
To introduce concepts of first order first degree differential equations.
To model various physical systems, such as orthogonal trajectories, Newton's law of cooling, Simple electrical circuits, Rectilinear motion, Heat transfer.
To introduce interpolating polynomials, numerical differentiation and integration.
To introduce concept of double and triple integration and their applications.
To introduce computational tools for solving mathematical problems.

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

	Course Outcomes	**Bloom's Level**
CO1	Explain types of differential equations, finite differences and multiple integrals.	2- Understanding
CO2	Solve problems on differential equations and multiple integrals.	3- Apply
CO3	Apply concept of numerical methods, differential and multivariate calculus to engineering problems.	3- Apply
CO4	Use computational tools for solving mathematical problems.	3- Apply
CO5	Analyze the solution of differential equations, numerical differentiation & integration and multiple integrals.	4- Analyze

COURSE CONTENTS

Unit I	**Differential Equations (DE)**	**8hrs+ 2hrsTutorial**	**COs Mapped - CO1, CO2, CO3**

Formation of differential equations Exact DE, equations reducible to exact form, Linear DE and Differential equation reducible to linear form.

Unit II	**Applications of Differential Equations**	**7hrs+ 2hrsTutorial**	**COs Mapped - CO1, CO2, CO3, CO5**

Application of DE to Orthogonal trajectories, Newton's Law of Cooling, Kirchhoff's Laws of Electrical Circuits, Motion under Gravity, Rectilinear Motion, Heat flow.

Unit III	Finite differences and Interpolation	7hrs+ 2hrsTutorial	COs Mapped – CO1, CO3 , CO5
Finite differences, differences of polynomials, relations between the operators, Newton's interpolation formula, Stirling's formula, Lagrange's Interpolation formula.			
Unit IV	**Numerical Differentiation and Integration**	**7hrs+2hrsTutorial**	**COs Mapped - CO1, CO3, CO5**
Numerical Differentiation: Euler's method, Euler's Modified Method, Runge- Kutta fourth order, Predictor- Corrector Method. **Numerical Integration:** Trapezoidal rule, Simpson's $1/3^{rd}$ and $3/8^{th}$ rule.			
Unit V	**Multiple Integrals and their Applications**	**7hrs+2hrsTutorial**	**COs Mapped - CO1, CO2, CO3,CO5**
Double and Triple integrations, applications to area, volume, mean and root mean square values and Center of Gravity.			

TextBooks

1.M.K. Jain, R.K.Jain, Iyengar, "Numerical Methods for scientific and engineering computation" (New age International)
2. B. S. Grewal ,"Higher Engineering Mathematics" Khanna Publication, Delhi.

Reference Books

1. Erwin Kreyszig ,"Advanced Engineering Mathematics" ,Wiley Eastern Ltd.
2. P. N. Wartikar and J. N. Wartikar," Applied Mathematics" (Volume I and II) , Pune VidyarthiGrihaPrakashan, Pune.

Strength of CO-PO Mapping												
	PO											
	1	2	3	4	5	6	7	8	9	10	11	12
CO 1	3	1	-	-	-	-	-	-	-	-	-	2
CO 2	3	1	1	-	-	-	-	-	-	-	-	2
CO 3	3	3	2	2	2	-	-	-	-	-	-	2
CO 4	1	-	-	-	3	-	-	-	-	-	-	2
CO5	3	3	2	2	2	-	-	-	-	-	-	2

Guidelines for Continuous Comprehensive Evaluationof Theory Course		
Sr. No.	**Components for Continuous Comprehensive Evaluation**	**Marks Allotted**
1	Assignments (Total 3 Assignment, Unit I and II 20 marks, Unit III and IV 20 marks and Unit V 10 marks &50 marks will be converted to 10 Marks)	10
2	Tests on each unit using LearniCo (Each test for 15 M and total will be converted out of 10 M)	10

List of Tutorial Assignments		
Sr. No.	**Title**	**CO Mapped**
1	Examples on formation of differential equations exact DE.	CO1, CO2
2	Examples on linear DE and reducible to linear differential equations.	CO1, CO2
3	Examples onapplication of DE to Orthogonal trajectories, Newton's Law of cooling.	CO1, CO2, CO3,CO5
4	Examples onElectrical Circuits, motion under gravity, Rectilinear Motion.	CO1, CO2, CO3,CO5
5	Solving differential equation using Matlab.	CO1, CO2, CO4
6	Examples onfinite differences, differences of polynomials, relations between the operators.	CO1, CO3
7	Examples onNewton's interpolation formula, Stirling's formula, Lagrange's Interpolation formula.	CO1, CO3 , CO5
8	Solve ordinary differential equations using Numerical Methods.	CO1, CO3 , CO5
9	Solve definite integration using Numerical Methods.	CO1, CO3 , CO5
10	Solving differential equation and definite integrals using Matlab.	CO1, CO2, CO4
11	Examples ondouble and triple integrations.	CO1, CO2, CO3
12	Examples on applications of double and triple integration.	CO1, CO2, CO3, CO5

Guidelines for Tutorial / Termwork Assessment		
Sr. No.	**Components for Tutorial / Termwork Assessment**	**Marks Allotted**
1	Assignment on computational software	5
2	Tutorial (Each tutorial carries 15 marks)	15
3	Attendance (Above 95 % : 05 Marks, below 75% : 0 Marks)	5

K.K.Wagh Institute of Engineering Education and Research, Nashik
(Autonomous from Academic Year 2022-23)

F. Y. B. Tech.
Pattern 2023
2300103A: Applied Physics
(Group A – Computer, IT, E&TC, AI&DS & CSD, Electrical, R&A)

Teaching Scheme:	Credit Scheme:	Examination Scheme:
Theory :03 hrs/week Practical : 02 hrs/week	03 01	Continuous Comprehensive Evaluation: 20Marks InSem Exam: 20Marks EndSem Exam:60Marks Termwork: 50Marks

Prerequisite Courses, if any: -

Course Objectives:
To impart knowledge on concepts of Electromagnetism and Electromagnetic waves.
To learn properties of semiconductors and nanomaterials for their applications in various technical fields.
To enable students to gain the knowledge of wave optics and their applications in various technical fields.
To study basic concepts of Quantum Mechanics for quantum computing.
To study the fundamentals and physical processes that govern energy usage and environmental conservation.

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

	Course Outcomes	Bloom's Level
CO1	Describe basics of electromagnetics, advanced materials, wave optics, wave mechanics and environmental energy	1-Knowledge
CO2	Classify advanced materials, refracting crystals and solar cell	2-Understand
CO3	Explain properties of superconductors,nano-materials and matter waves	2-Understand
CO4	Calculate characteristics of electromagnetic circuits andoptical devices, conductivity,efficiency of solar and wind power unit.	3-Apply
CO5	Use concepts of electromagnetic effect, semiconductors, wave optics and wave equations in real life problems	3-Apply

COURSE CONTENTS

Unit I	Electromagnetism &Electromagnetic Waves	(08hrs)	COs Mapped - CO1, CO2

Electromagnetism:
Introduction: Magnetic effect of an electric current, cross and dot conventions, right hand thumb rule, nature of magnetic field of long straight conductor, solenoid and toroid. Concept of mmf, flux, flux density, reluctance, permeability and field strength, their units and relationships.
Simple series magnetic circuit, Introduction to parallel magnetic circuit, comparison of electric and magnetic circuit, force on current carrying conductor placed in magnetic field.
Faradays laws of electromagnetic induction, Fleming right hand rule, statically and dynamically induced e.m.f., self and mutual inductance, coefficient of couplings. Energy stored in magnetic field; Fleming left hand rule.
Electromagnetic Waves

Introduction, Electromagnetic Waves, Electromagnetic WaveEquations, Maxwell's Wave Equations for Free Space

Unit II	Semiconductors, Superconductivity, Nano-Material	(06hrs)	COs Mapped - CO1, CO2, CO4, CO5

Semiconductors:
Types of semiconductor, Conductivity of conductors and semiconductors, temperature dependence of conductivity, Fermi Dirac distribution function, Position of Fermi level in intrinsic and extrinsic semiconductors, variation with respect to temperature and doping concentration, Hall effect: Derivation for Hall voltage, Hall coefficient, applications of Hall effect.
Superconductivity:
Definition, Properties, type of superconductor, Josephson effect and applications
Nano-Materials:
Introduction, quantum confinement effect, surface to volume ratio, properties: Optical, electrical & Mechanical.

Unit III	Wave Optics	(08hrs)	COs Mapped - CO1, CO2, CO4, CO5

Polarization – Introduction of polarization, law of Malus, double refraction, Huygens theory, LCD.
Diffraction – Introduction of diffraction, types of diffraction, diffraction grating, conditions for principal maxima and minima, maximum orders of diffraction, Rayleigh's criterion,
Interference – Introduction, thin film interference, optical flatness testing, antireflection coating, Rayleigh interferometer and Radio interferometer.
Laser: Basic terms and types of lasers, application (IT, Medical & Industry), laser interferometer and Hologram Interferometer.
Optical Fibre – Introduction and basic terms, Fibre optic communication with block diagram.

Unit IV	Quantum Mechanics & Quantum Computing	(07hrs)	COs Mapped - CO1, CO2, CO3, CO5

Basics of Quantum theory, postulates of quantum mechanics, wave nature of particles, wave function, Schrodinger's time dependent equation, Stern-Gerlach experiment, electron spin, superposition of states, Entanglement Bits and Qubits, Implementing a quantum computer : Ion trap, Linear optics, NMR and superconductors.

Unit V	Energy and Environment	(07hrs)	COs Mapped - CO1, CO2, CO4

Energy and its Usage:
Overview of World energy scenario, climate change, Engineering for energy conservation, units and scales of energy.
Solar Energy:
Introduction to solar energy, fundamentals of solar radiation and its measurement aspects, basic physics of solar cell, carrier transport, generation & recombination in solar cell, semiconductor junctions: metal-semiconductor junction & p-n junction, essential characteristics of solar photovoltaic devices, First generation solar cells, Second generations of Solar cells, Third generations of solar cells-Quantum Dot solar cell, multi junction solar cells
Fluid and Wind Power:
Fluid dynamics and power in the wind, available resources, Wind turbine dynamics, wind farms

Text Books

1. V K Mehta and RohitMehta ,"Basic Electrical Engineering", S Chand Publications.
2. M.N. Avadhanulu and P.G. Kshirsagar,"Engineering Physics ", S. Chand Publications
3. Robert L. Jaffe and Washington Tayler, "The Physics of Energy", Cambridge University Press

Reference Books
1.H.D.Young and R.A.Freedman, "University Physics", Pearson Publication 2.Resnick and Halliday, "Principles of Physics", John Wiley and Sons 3. Jenkins and White , "Optics" , Tata McGraw Hill 4.Noson S. Yanofsky and Mirco A. Mannucci, "Quantum computing for computer scientists".

Strength of CO-PO Mapping												
	PO											
	1	2	3	4	5	6	7	8	9	10	11	12
CO1	3	-	-	-	-	-	2	1	1	-	-	1
CO2	3	3	-	-	2	-	2	1	1	-	-	1
CO3	3	-	-	-	-	-	-	1	1	-	-	1
CO4	3	3	-	-	-	-	2	1	1	-	-	1
CO5	3	3	2	-	2	2	2	1	1	1	-	1
Average	3	3	2	-	2	2	2	1	1	1	-	1

Guidelines for Continuous Comprehensive Evaluationof Theory Course		
Sr. No.	**Components for Continuous Comprehensive Evaluation**	**Marks Allotted**
1	Three Assignments on unit-1, Unit-2, Unit-3 & 4	05
2	Group Presentation on Unit-5	10
3	LearniCo Test on Each Unit	05
	Total	**20**

List of Laboratory Experiments / Assignments		
Sr. No.	**Laboratory Experiments / Assignments**	**CO Mapped**
1	Experiment based on Newton's rings (determination of wavelength of monochromatic light, determine radius of curvature of plano-convex lens).	**CO1, CO5**
2	To determine position of diffraction minima by studying diffraction at a single slit.	**CO4**
3	To determine unknown wavelength by using plane diffraction grating.	**CO4**
4	To verify Law of Malus.	**CO4, CO5**
5	Experiment based on Double Refraction (Determination of refractive indices / Identification of types of crystal).	**CO1, CO5**
6	To determine band gap of given semiconductor.	**CO4**
7	To study IV characteristics of Solar Cell and determine parameters (fill factor and efficiency).	**CO4**
8	To determine Hall coefficient and charge carrier density.	**CO4, CO5**
9	Experiment based on Laser (Determination of thickness of wire / Number of lines on grating surface).	**CO4**
10	Determination of refractive index using Brewster's law.	**CO4**
11	To determine magnetic force on a current carrying conductor.	**CO4, CO5**
12	To study magnetic induction due to current carrying conductor	**CO4, CO5**
13	To study the quantum confinement effect in synthesis of silver nano-particles.	**CO3, CO5**

Guidelines for Laboratory Conduction
1. Teacher will brief the given experiment to students its procedure, observations calculation, and outcome of this experiment. 2. Apparatus and equipments required for the allotted experiment will be provided by the lab assistants using SOP. 3. Students will perform the allotted experiment in a group (two students in each group) under the supervision of faculty and lab assistant. 4. After performing the experiment students will check their readings, calculations from the teacher. 5. After checking they have to write the conclusion of the final result.
Guidelines for Student's Lab Journal
Write-up should include title, aim, diagram, working principle, procedure, observations, graphs, calculations, conclusion and questions, if any.
Guidelines for Termwork Assessment
1. Each experiment from lab journal is assessed for thirty marks based on three rubrics. 2. Rubric R-1 for timely completion, R-2 for understanding and R-3 for presentation/journal writing where each rubric carries ten marks.

K.K.Wagh Institute of Engineering Education and Research, Nashik
(Autonomous from Academic Year 2022-23)

F. Y. B. Tech. (All Branches)
Pattern 2023
2300105A: Fundamentals of Electrical Engineering
(Branch: AIDS, Comp, CSD, IT, Electrical, R&A)

Teaching Scheme:	Credit Scheme:	Examination Scheme:
Theory:03hrs/week Practical: 02hrs/week	03 01	Continuous Comprehensive Evaluation: 20Marks InSem Exam: 20Marks EndSem Exam:60Marks Termwork: 50Marks

Prerequisite Courses: -

Course Objectives:
To make students aware of the fundamentals of electrical circuits
To explain the working principles of electrical machines and batteries
To introduce the components of low voltage electrical installations

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

	Course Outcomes	Bloom's Level
CO1	Define terminologies and laws related to AC-DC circuits, machines and batteries.	1-Remember
CO2	Demonstrate the need for safety precautions and procedures, components and instruments in the laboratory.	2-Understand
CO3	Elaborate construction, working and performance characteristics of electrical machines and protective devices.	2-Understand
CO4	Solve problems on AC-DC circuits, work, power and energy using relevant laws and theorems.	3-Apply
CO5	Select appropriate machines, protective devices for a given applications.	3-Apply
CO6	Calculate and analyze transformer efficiency, regulation and LT, HT electricity bill.	4-Analyze

COURSE CONTENTS

Unit I	Work, Power, Energy, Batteries and Supplies	(8hrs)	COs mapped - CO1, CO4

Work, Power, Energy: Effect of temperature on resistance, resistance temperature coefficient, insulation resistance, conversion of energy from one form to another in electrical, mechanical, and thermal systems.
Batteries and Power Supply: Charging and discharging of batteries, the concept of depth of charging, maintenance of batteries, series-parallel connection of batteries, Introduction to UPS, SMPS

Unit II	DC circuits	(8hrs)	COs mapped - CO1, CO4

Types of electrical circuits, KVL and KCL, sources and source transformations, star-delta connection, Superposition, and Thevenin's theorem

Unit III	AC Circuits	(8hrs)	COs mapped - CO1, CO4
Representation of sinusoidal waveforms, peak and RMS values, Phasor representations, real power, reactive power, apparent power, power factor, analysis of single-phase AC circuits consisting of pure R, L, C, series R-L, R-C, R-L-C combinations, parallel AC circuit, series, and parallel resonance			
Unit IV	**Three-phase circuits and Electrical Installations**	**(8hrs)**	**COs mapped - CO3, CO4, CO5**
Three-Phase Circuit: Three-phase balanced circuits, voltage and current relations in star and delta connections, and power calculations. **Electrical Installations:** Components of LT Switchgear: fuse MCB, ELCB, types of wiring, earthing.			
Unit V	**Electrical Machines**	**(8hrs)**	**COs mapped - CO1, CO3, CO5, CO6**
Transformers: Construction, principle, e.m.f. equation, ideal and practical transformer, vector diagram for ideal transformer, losses, regulation and efficiency, Introduction to Auto-transformer. **Electrical machines:** Construction, working principle and types of DC generator and motor, construction, working principle and applications of stepper motor.			

Text Books

1. B.L. Theraja, A. K. Theraja, "A Textbook of Electrical Technology" - Volume I: Basic Electrical Engineering: Part 1 and 2. S Chand Publication.
2. BhartiDwivedi, AnuragTripathi, "Fundamentals of Electrical Engineering", 2nd Edition, Wiley Publication.

Reference Books

1. D.P. Kothari and I. J. Nagrath, "Basic Electrical Engineering", Tata McGraw Hill, 2010.
2. E. Hughes, "Electrical and Electronics Technology", Pearson, 2010.
3. H. Cotton, "Electrical Technology", 7th Edition, CBS Publications and distributors.

Strength of CO-PO Mapping												
Course Outcomes	Program Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
CO1	3	--	--	--	--	--	--	--	--	--	--	1
CO2	3	--	--	--	--	2	--	--	2	3	--	3
CO3	3	--	--	--	--	--	--	--	2	3	--	3
CO4	3	3	--	--	--	--	--	--	2	3	--	2
CO5	3	--	2	--	--	--	--	--	2	3	--	3
CO6	3	3	--	--	2	2	--	--	2	3	--	3

Guidelines for Continuous Comprehensive Evaluationof Theory Course		
Sr. No.	**Components for Continuous Comprehensive Evaluation**	**Marks Allotted**
1	Assignment 1 – (Units 1 to 2, before the in-semester exam)	4 Marks
2	Assignment 2 – (Units 3 to 4, after in-semester exam)	4 Marks
3	Minimum 10 LearniCo sessions (taking best 5)	4 Marks
4	Class Test – (Units 3 to 5, before end-semester exam)	8 Marks

List of Laboratory Experiments		
Sr. No.	**Laboratory Experiments**	**COs Mapped**
1	To introduce basic safety precautions, introduction and use of measuring instruments, like voltmeter, ammeter, multi-meter, oscilloscope, etc., the practical relevance of resistors, capacitors and inductors.	**CO2**
2	To analyze the effect of temperature on resistance of conducting material and measure the insulation resistance of cable/equipment using Megger	**CO2**
3	To study LT and HT electricity bills and energy conservation	**CO6**
4	To demonstrate different types of electrical protection equipment such as fuses, MCB, MCCB, ELCB	**CO3, CO5**
5	To verify Thevenin's Theorem on DC supply	**CO1, CO4**
6	To analyze series RL and RC circuits on single phase AC supply.	**CO4**
7	To find efficiency and regulation of single-phase transformer at different loading conditions.	**CO6**
8	To determine the relationship between phase and line quantities for a three-phase AC circuit when the load is star and delta connected.	**CO4**
9	To demonstrate the construction and working of electrical machines.	**CO3, CO5**

Guidelines for Laboratory Conduction

- In each laboratory session, four to five students will perform the experiment in a group.
- Students should do connections under the supervision of the teachers and get the results by following safety precautions and procedures.

Guidelines for Student's Lab Journal

The Student's Lab Journal should contain the following -

- Apparatus with their detailed specifications.
- Connection diagram /circuit diagram.
- Observation table/ simulation waveforms.
- Sample calculations for one/two readings.
- Result table, Graph and Conclusions.
- Few short questions related to the experiment.

Guidelines for Term Work Assessment

1. The student's termwork will be through continuous assessment.
2. Each experiment from lab journal is assessed for thirty marks based on three rubrics.
   Rubric R-1 for timely completion, R-2 for understanding and R-3 for presentation/journal writing where each rubric carries ten marks.

K.K.Wagh Institute of Engineering Education and Research, Nashik.
(Autonomous from Academic Year 2022-23)

F. Y. B. Tech.
Pattern 2023
2300110A: Engineering Drawing

Teaching Scheme:	**Credit Scheme:**	**Examination Scheme:**
Theory:01hr/week **Practical: 02hrs/week**	**01** **01**	**In-Sem Exam: 20Marks** **End-Sem Exam: 30Marks** **Term Work: 50 Marks**

Prerequisite Courses: -

Course Objectives:
To explain the fundamental concepts of engineering drawing and its standards.
To improve visualization skills of physical objects on paper.
To develop interpretation and drawing skills by manual and computerized graphical techniques.

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

COs	**Course Outcomes**	**Bloom's Level**
CO1	Explain the need of engineering drawing and its standards.	2-Understand
CO2	Interpret engineering drawing by visualization.	2-Understand
CO3	Draw projections of 2D and 3D objects.	3-Apply
CO4	Apply manual and computerized graphical tools to solve practical problems.	3-Apply

COURSE CONTENTS

Unit I	**Projections of a Point and Line**	**(03hrs)**	**COs Mapped – CO2, CO4**
Projections of a point, projections of a line located in first quadrant only.			
Unit II	**Projections of Plane**	**(02hrs)**	**COs Mapped – CO2, CO3, CO4**
Types of planes, projections of plane inclined to both the reference planes			
Unit III	**Orthographic Projections**	**(03hrs)**	**COs Mapped - CO1, CO2, CO3, CO4**
Principle of projections, types of projections, introduction to first and third angle methods of projection, basic rules of orthographic projection, orthographic and sectional orthographic projection of simple objects and machine elements/parts. Applications of orthographic drawing in industries.			
Unit IV	**Isometric Projections**	**(02hrs)**	**COs Mapped – CO2, CO3, CO4**
Introduction to isometric projection and isometric scale. Construction of isometric view from given orthographic views. Applications of isometric drawing in industries.			
Unit V	**Development of Lateral Surfaces of Solids and Introduction to Computer Aided Drafting**	**(03hrs)**	**COs Mapped - CO1, CO2, CO3, CO4**
Types of solids, projection of solids resting on HP only. Methods of development: parallel line development and radial line development. Development of simple solids like cone, cylinder, prism, tetrahedron and pyramid. Introduction to CAD and basic commands to draw simple 2D and 3D objects.			

TextBooks
1. Bhatt, N. D. and Panchal, V. M., (2016), "Engineering Drawing", Charotar Publication, Anand, India 2.Jolhe, D. A., (2015), "Engineering Drawing with introduction to AutoCAD", Tata McGraw Hill, New Delhi
Reference Books
1. Bhatt, N. D., "Machine Drawing", Charotar Publishing house, Anand, India.

Strength of CO-PO Mapping												
	PO											
	1	2	3	4	5	6	7	8	9	10	11	12
CO1	2	--	--	--	--	--	--	--	--	--	--	1
CO2	2	--	--	--	--	--	--	--	--	1	--	1
CO3	2	--	--	--	2	--	--	--	--	1	--	1
CO4	2	--	--	--	2	--	--	--	--	1	--	1
Average	**2**	**--**	**--**	**--**	**2**	**--**	**--**	**--**	**--**	**1**	**--**	**1**

List of Laboratory Assignments		
Sr. No.	**Laboratory Assignments**	**CO Mapped**
1	Projection of lines and Projection of Planes (One problem each)	CO2, CO3, CO4
2	Orthographic Projection of given objects including sectional view. (Two Problems)	CO1, CO2, CO3, CO4
3	Isometric view / projection for the given set of two-dimensional views. (Two Problems)	CO2, CO3, CO4
4	Development of Lateral Surfaces of solids. (Two Problems)	CO1, CO2, CO3, CO4
5	Orthographic Projection of given object using any drafting software (One Problem)	CO1, CO2, CO3, CO4
6	Isometric view / projection of given object using any drafting software (One Problem)	CO2, CO3, CO4

Guidelines for Laboratory Conduction
Students will solve six laboratory assignments on A2 size drawing sheet.
Guidelines for Tutorial Conduction
Students will solve four tutorial assignments by using any drafting software. Drawing limits for all drawings to be made in drafting software should be set to A2 Size. At the end of semester students shall submit all soft copies of all assignments to a concerned faculty.
Guidelines for Termwork and Tutorial Assessment
Each laboratory and tutorial assignments will be assessed for 30 Marks according to following rubrics: R1- Timely completion of assignments (10 Marks) R2- Understanding of assignment (10 Marks) R3 – Presentation/Clarity of journal writing (10 Marks) For all six drawing sheets total marks of 180 will be converted into 25 Marks. For all four tutorial assignments total marks of 120 will be converted into 25 marks.

K.K.Wagh Institute of Engineering Education and Research, Nashik
(Autonomous from Academic Year 2022-23)

F. Y. B. Tech.
Pattern 2023 Semester: II
FYE2300116D: Computational Thinking and Problem Solving

Teaching Scheme:	**Credit Scheme:**	**Examination Scheme:**
Theory : 02 hrs/week	**02**	**InSem Exam:** 20Marks **EndSem Exam:** 60Marks **Continuous Comprehensive Evaluation:** 20Marks

Prerequisite Courses, if any: -

Course Objectives:

- To understand the concept of Computational thinking and problem solving
- To learn about the pillars of computational thinking to solve computational problem
- To use algorithms to develop and express solutions to computational problems

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

	Course Outcomes	**Bloom's Level**
CO1	Illustrate the concept of Computational Thinking and its application for problem solving	2-Understand
CO2	Illustrate decomposition techniques in computation and programming paradigms	2-Understand
CO3	Develop a step by step strategy for solving a problem	3-Apply
CO4	Apply searching and sorting approaches	3-Apply
CO5	Solve the problem by identifying repeated patterns	3- Apply

COURSE CONTENTS

Unit I	**Introduction to Computational Thinking**	**06 hrs**	**COs Mapped – CO1**

Introduction to computational thinking- What Is Computational Thinking?, Computer Science and Computational Thinking, MOORE'S Law, Information and data, Converting information into data, Data Types - Numbers, Text, Colors, Pictures, Sound, Numbers - Binary, Hexadecimal, Octal, Conversion, BCD, Data encoding.

Unit II	**Problem Solving & Programming Paradigms**	**06hrs**	**COs Mapped – CO1, CO2**

Problem definition, Logical reasoning, Problem decomposition
Introduction to programming paradigms, Introduction to four main Programming paradigms- procedural, object oriented, functional, and logic & rule based

Unit III	**Factoring Methods**	**06 hrs**	**COs Mapped –CO3**

Finding square root of a number, The smallest divisor of an integer, Generating prime numbers, Generation of pseudo-random numbers, Raising a number to a large power, Computing the n^{th} Fibonacci number

Unit IV	**Searching & Sorting**	**06 hrs**	**COs Mapped –CO4**

Searching – Binary and Linear
Sorting- Insertion, Exchange and Selection

Unit V	Text Processing and Pattern matching	06 hrs	COs Mapped –CO5
Text processing – Length adjustment, Justification, Keyword search Pattern matching – Linear and sub-linear pattern search			
Text Books			
1. Karl Beecher, "Computational Thinking, A Beginner's guide to Problem solving and Programming", BCS Learning & Development Ltd, 2017 2. R.G. Dromey , "How to solve it by Computer", PHI, 2008			
Reference Books			
1. David Riley and Kenny Hunt , Computational thinking for modern solver, Chapman & Hall/CRC, 2014 2. Computational Thinking by G Venkatesh , Madhavan Mukund , Notion Press; 1st edition, ISBN-10 : : 168523481X			

Guidelines for Continuous Comprehensive Evaluation of Theory Course		
Sr. No.	**Components for Continuous Comprehensive Evaluation**	**Marks Allotted**
1	Quiz on Unit 1, Unit-2, Unit-3 (Quiz 10 marks each and will be converted to 10 Marks)	10
2	Assignment on Unit-4 and Unit-5 (Assignments of 10 marks each will be converted to 10 Marks)	10
	Total	**20**

K.K.Wagh Institute of Engineering Education and Research, Nashik
(Autonomous from Academic Year 2022-23)

F. Y. B. Tech. (All Branches)
Pattern 2023
FYE2300114A: Indian Knowledge System

Teaching Scheme:	**Credit Scheme:**	**Examination Scheme:**
Tutorial: 02 hrs/Week	**02**	**Termwork: 50Marks**

Course Objectives:
To create awareness of contributiojn of India in the field of engineering

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

	Course Outcomes	**Bloom's Level**
CO1	Understand the term 'Indian Knowledge System' it's framework andkey components.	1-Remember
CO2	Appreciate the measurement techniques and mathematics in IKS	2-Understand
CO3	Identify and elaborate the applications of IKS in engineering domain	3-Apply

COURSE CONTENTS

Unit I	**Overview of Indian Knowledge System**	**(6 hrs)**	**COs mapped-CO1**

Importance of ancient knowledge, Definition of IKS, the IKS Corpous, Caturdasa and Vidyasthana. Tarka: The Indian Art of Debate, The knowledge triangle, Premeya, Praman, Samasya, Framwork for establishing valid knowledge.

Unit II	**Mathematics and Measurement in IKS**	**(6 hrs)**	**COs mapped-CO1**

Numbering system in India, Salient features of Indian Numeral System, Unique approaches to represent numbers, measurement of time, distance and weight, Pingala and the binary system.

Unique aspects of Indian mathematics, Great mathematicians and their contribution, square a number, square root, series and progressions, Geometry, The value of π, Trigonometry, algebra, Binary mathematics and combinatorial problems in Chandah-sastra of Pingala, magic squares in India

Unit III	**Astronomy in IKS**	**(6 hrs)**	**COs mapped-CO4**

Unique aspects of Indian Astronomy, Historical development of astronomy in India, The celestial coordinate system, elements of Indian Calender, Aryabhatiya and Siddhantic tradition, Pancanga-The Indian calender system, Astronomical instruments, Jantar Mantar of Raja Jai Singh Sawai

Unit IV	**Metalworking and Other applications in IKS**	**(6 hrs)**	**COs mapped-CO2, CO3**

The Indian S&T heritage, mining and Ore extraction, metal and metalworking technology, Iron and steel in India, Lost wax casting of Idols and Artfacts, Apparatuses used.

Literature sources of science and technology, physical structures in India, Irrigation and water management, dyes and paintings technology, shipbuilding, 64 Kalas.

Unit V	Town Planning and Architecture in IKS	(6 hrs)	COs mapped- CO3, CO5
Indian Architecture, Vastu-sastra, Vastupurush mandala, Eight limbs of vastu, Town planning, Unitary building, Temple architecture			

Text Books

1. Mahadevan, B., Bhat Vinayak Rajat, Nagendra Pavana R.N. (2022), "Introduction to Indian Knowledge System: Concepts and Applications", PHI Learning Private Ltd. Delhi.
2. Kapoor Kapil, Singh Avadhesh (2021). "Indian Knowledge Systems Vol – I & II", Indian Institute of Advanced Study, Shimla, H.P.

Reference Books

1. Datta, B. and Singh, A.N. (1962). History of Hindu Mathematics: Parts I and II, Asia Publishing House, Mumbai.
2. Kak, S.C. (1987). "On Astronomy in Ancient India", Indian Journal of History of Science, 22(3), pp. 205–221.
3. Subbarayappa, B.V. and Sarma, K.V. (1985). Indian Astronomy: A Source Book, Nehru Centre, Mumbai.
4. Bag, A.K. (1997). History of Technology in India, Vol. I, Indian National Science Academy, New Delhi.
5. Acarya, P.K. (1996). Indian Architecture, MunshiramManoharlal Publishers, New Delhi.
6. Banerjea, P. (1916). Public Administration in Ancient India, Macmillan, London.

Online Course

1. Indian Knowledge System(IKS): Concepts and Applications in Engineering
https://onlinecourses.swayam2.ac.in/imb23_mg53/preview

Term work Assessment:

1.	Assignment 01 (Unit 01 and 02)	15 Marks
2.	Assignment 02 (Unit 03 and 04)	15 Marks
3.	Field visit and quiz	10 Marks
4.	Group Presentation (group of 5 students)	10 Marks

Guidelines for Term Work Assessment

1. The student's termwork will be through continuous assessment.
2 Rubric R-1 for timely completion, R-2 for understanding and R-3 for presentation/journal writing where each rubric carries ten marks.

K.K.Wagh Institute of Engineering Education and Research, Nashik
(Autonomous from Academic Year 2022-23)

F. Y. B. Tech. Computer Engineering
Pattern 2023 Semester: II
FYE2300115A : Python Programming

Teaching Scheme:	**Credit Scheme:**	**Examination Scheme:**
Theory : 1 hr/week **Practical : 2 hrs/week**	**02**	**Continuous Comprehensive Evaluation:** 25Marks **Term Work :** 25 Marks

Prerequisite Courses:- FYE2300108A: Programming in C

Course Objectives:

- To understand core python programming
- To understand python looping, control statements and string manipulations
- To understand the basic concepts of functions

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

	Course Outcomes	**Bloom's Level**
CO1	Use the core concepts of python to write a python program	3-Apply
CO2	Apply control structure and loops to build a solution for a given problem	3-Apply
CO3	Develop a python program using arrays and strings	3-Apply
CO4	Build a solution for a given problem using lists, sets, tuples, dictionaries	3-Apply
CO5	Develop programs using functions	3-Apply

COURSE CONTENTS

Unit I	**Basics of Python Programming**	**(03Hrs)**	**COs Mapped - CO1**

Features of Python, History and Future of Python, Writing and executing Python program, Literal constants, variables and identifiers, Data Types, Input operation, Comments, Reserved words, indentation, Operators and expressions, Expressions in Python

Unit II	**Decision Control Statements**	**(03Hrs)**	**COs Mapped - CO2**

Conditional algorithmic constructs: if, if-else, nested if-else, cascaded if-else and switch statement
Iterative algorithmic constructs: 'for', 'while' statements, nested loops, Continue, break statements

Unit III	**Arrays**	**(03Hrs)**	**COs Mapped - CO3**

Arrays: One- dimensional, multidimensional array, character arrays (Strings)
Built in string methods and functions

Unit IV	**Mutable and immutable data structures**	**(03Hrs)**	**COs Mapped - CO4**

Mutable data structures : lists, sets, dictionaries
Immutable data structure: Tuples

Unit V	**Functions**	**(03Hrs)**	**COs Mapped - CO5**

Function: definition, call, variable scope and lifetime, the return statement. Defining functions, Lambda or anonymous function

Text Books
1. Reema Thareja, "Python Programming Using Problem Solving Approach", Oxford University Press, ISBN 13: 978-0-19-948017-6 2. 2. R. Nageswara Rao, "Core Python Programming", Dreamtech Press, ISBN-13: 978-9386052308
Reference Books
1. R. G. Dromey, "How to Solve it by Computer", Pearson Education India, ISBN-13: 978-8131705629 2. Maureen Spankle, "Problem Solving and Programming Concepts", Pearson, ISBN-13: 978-0132492645

List of Laboratory Experiments / Assignments		
Sr. No.	**Laboratory Experiments / Assignments**	**CO Mapped**
1	Write a python program that accepts seconds as input of type integer. The program should convert seconds in hours, minutes and seconds. Output should like this : Enter seconds: 12200 Hours: 3 Minutes: 23 Seconds: 20	**CO1**
2	**Conditional Structures** The marks obtained by a student in 3 different subjects are input by the user. Python program should calculate the average marks obtained in 3 subjects and display the grade. The student gets a grade as per the following rules: Average Grade 90-100 O 80-89 A 70-79 B 60-69 C 40-59 D 0-39 F	**CO2**
3	**Control structures** Floyd's triangle is a right-angled triangular array of natural numbers as shown below: 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 Write a python program to print the Floyd's triangle	**CO2**
4	**String** Write a python program that accepts a string to setup a password with following requirements: • The password must be at least eight characters long • It must contain at least one uppercase letter	**CO3**

	• It must contain at least one lowercase letter • It must contain at least one numeric digit The program checks the validity of password.	
5	**List** Write a python program to • Find the sum and average of given numbers using lists • Display elements of list in reverse order • Find the minimum and maximum elements in the lists	**CO4**
6	**Tuple** Write a Python program to sort a tuple by its float element. Sample data: [('item1', '13.10'), ('item2', '17.10'), ('item3', '25.3')] Expected Output: [('item3', '25.3'), ('item2', '17.10'), ('item1', '13.10')]	**CO4**
7	**Dictionary** Write a python program to read string from user and create a dictionary having key as word length and value is count of words of that length. For example, if user enters 'I scream you scream we all scream for ice cream' Word Word length I 1 scream 6 you 3 scream 6 we 2 all 3 scream 6 for 3 ice 3 cream 5 The content of dictionary should be {1:1, 6:3, 3:4, 2:1, 5:1}	**CO4**
8	**Set** Write a python program for operations on set	**CO4**
9	**Function** Write a function in python to display the elements of list thrice if it is a number and display the element terminated with '#' if it is not a number. Suppose the following input is supplied to the program: ['23','MAN','GIRIRAJ', '24','ZARA'] The output should be 232323 MAN# GIRIRAJ# 242424 ZARA#	**CO5**
Mini Project		
10	Develop a mini project in a group based on Python programming concepts	**CO1 to CO5**
Guidelines for Laboratory Conduction		
Use of coding standards and Hungarian notation, proper indentation and comments. Operating System recommended:- Linux or its derivative Use the concepts of design thinking in mini project.		

Guidelines for Student's Lab Journal
The laboratory assignments are to be submitted by students in the form of a journal. Journal consists of Certificate, table of contents, and handwritten write-up of each assignment (Title, problem statement, theory concepts in brief, algorithm, flowchart, test cases and conclusions). Program codes with sample outputs shall be submitted in soft form.
Guidelines for Termwork Assessment
Continuous assessment of laboratory work shall be based on the overall performance of a student. Assessment of each laboratory assignment shall be based on rubrics that include R1- timely completion (10) R2- understanding of assignment (10) R3- Use Coding standards, proper documentation, neatness of writeup (10) – 5 marks for coding standards and documentation and 5 marks for neatness of write up
Components for Continuous Comprehensive Evaluation
Quiz of 10 Marks on each unit and will be converted to 25 Marks

K.K.Wagh Institute of Engineering Education and Research, Nashik
(Autonomous from Academic Year 2022-23)

F. Y. B. Tech. **Pattern 2023 Semester: II** **2300136A: Engineering Explorations**		
Teaching Scheme:	**Credit Scheme:**	**Examination Scheme:**
Tutorial : 02hrs/week	**02**	**Tutorial/Term Work: 75Marks**
Prerequisite Courses, if any: ----		

Course Objectives:
1. To promote learning through interdisciplinary and student-centric activities.
2. To inculcate independent learning by problem solving.
3. To engage students in rich experiential learning.
4.To provide opportunity to get involved in a group so as to develop team skills and learn professionalism.

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

	Course Outcomes	**Bloom's Level**
CO1	Applyprinciples from several disciplines.	**3-Apply**
CO2	Demonstratelong-term retention of knowledge and skills acquired.	**3-Apply**
CO3	Function effectively as a team to accomplish a desired goal.	**3-Apply**
CO4	Explore an Engineering Product and prepare its Mind map	**4-Analysis**
CO5	Enhancetheir learning ability to solve practical problems.	**5-Synthesis**

Reference Books

1.Project-Based Learning, Edutopia, March 14, 2016.
2. What is PBL? Buck Institute for Education.

Strength of CO-PO Mapping												
	PO											
	1	2	3	4	5	6	7	8	9	10	11	12
CO1	2	2	-	1	-	2	2	1	-	-	-	-
CO2	-	-	-	-	-	-	-	-	-	2	2	2
CO3	-	-	-	-	-	-	-	-	3	-	-	-
CO4	2	2	-	2	-	2	2	1	3	3	-	-
CO5	2	2	2	2	2	2	2	1	3	3	2	2

Preamble

Experiential learning involves a number of steps that offer student a hands-on, collaborative and reflective learning experience which helps them to "fully learn new skills and knowledge". During each step of the experience, students will engage with the content, the instructor, each other as well as self–reflect and apply what they have learned in another situation.

Students undergo the Experiential Learning through following phases of Engineering Exploration, Engineering Design and Product Realization. Students will undertake mini projects to acquaint with knowledge in the various domains of Engineering.

The course introduces students to analyzing, designing, developing, testing, report writing and project presentations that demonstrate understanding. Students will be asked to observe, document, raise questions and draw conclusions. Teachers rely on a variety of resources to enrich students' studies that may include meeting experts and hands-on experimentation.

Guidelines for Course Conduction

- There should be a group of 4-5 students.
- Groups will be monitored by the Course teacher.
- Following two assignments will be completed by all groups
  A) Exploration of an Engineering product like Electronic Voting Machine, Car, Mobile handset, Elevator / Escalator, Operation Table, Solar water heater. The exploration will be based on working principle, specifications, material used, manufacturing process, technology used, operations (observable and controllable), ergonomics, extent of automation, safety features, environmental issues, maintenance and costing.
  B) Teachers will identify 12-15 mini project ideas.
- Every group will undertake a mini project in consultation with the Course teacher.
- Project ideas will be common to all first year divisions but the implementation might be different.
- The students will plan, manage and complete the associated tasks.

Guidelines for Course Completion

Students will present/submit the Mind Map of the Engineering product chosen for exploration.
Students will exhibit/demonstrate the completed project at the end of the semester along with a brief report in a recommended format as term work submission.

Guidelines for Term work Assessment

The Course teacher is committed to assess and evaluate the students' performance. Progress of work done will be monitored on weekly basis.

During process of monitoring and continuous assessment, the individual and team performance is to be measured.

- Individual assessment for each student should be based on understanding individual capacity, role and involvement in the Engineering Product Exploration/project.
- Group assessment should be based on roles defined, distribution of work, intra-team communication and togetherness.
- Documentation and Demonstration.

It is recommended that all activities are to be recorded regularly and proper documents are to be maintained by both students as well as the course teacher.
Continuous Assessment Sheet (CAS) is to be maintained by the Course teacher.

A) Recommended parameters for assessment of Engineering Product Exploration: (25marks)
   Working principle, specifications, material used, manufacturing process, technology used, operations (observable and controllable), ergonomics, extent of automation, safety features,

environmental issues, maintenance and costing.

B) Recommended parameters for assessment of Project: (25marks)

- Outcomes of Mini Project / Problem Solving Skills/ Solution provided/ Final product **(50%)** (Individual assessment and team assessment)
- Documentation (Gathering requirements, design &modeling, implementation/execution, use of technology and final report, other documents) **(25%)**
- Demonstration (Presentation, User Interface, Usability, Participation in Exhibition/Contest etc) **(15%)**
- Awareness /Consideration of – Environmental / Social / Ethical / Safety /Legal aspects **(10%)**

K.K.Wagh Institute of Engineering Education and Research, Nashik(Autonomous from Academic Year 2022-23)

F. Y. B. Tech. Pattern 2023 Semester: II FYE2300117: Internship		
Teaching Scheme:	**Credit Scheme:**	**Examination Scheme:**
	02	**Term Work : 100 Marks**

Course Objectives:

To know the industry environment

1. To encourage and provide opportunities for students to get professional experience through internships.
2. To learn and understand real life/industrial situations.

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

	Course Outcomes	Bloom's Level
CO1	To demonstrate professional competence through industry internship.	Level 3, Apply
CO2	To analyze various career opportunities and decide carrier goals.	Level 4, Analyze

Internship guidelines to obtain UG Certification after FY

Unfortunately if any student could not continue his Engineering after FY B. Tech. and desires to Exit the programme for such student Internship provides an excellent opportunity to become Industry ready. For this student must have completed first year by obtaining 42 credits of first year. The duration of internship shall be of 3 to 4 weeks and to be carried out during summer vacation either in an industry in an offline/online manner or through on campus training programmes conducted by industry experts/faculty. It is mandatory for such students to earn 2 credits.

Detail Guidelines:

Duration:

- Internship is to be completed after successful completion of both the semesters of first year for 3 to 4 weeks duration.

Internship work Identification:

Students may choose to undergo Internship at Industry / Govt. Organizations / NGO / MSME etc. in consultation with the faculty mentor.

Students must get Internship proposals sanctioned from college authority. Internship work identification process should be initiated in the 2nd semester in consultation with the faculty mentor and training and placement cell / internship cell. This will help students to start their internship work in time.

Student can take internship work in the form of the following but not limited to:

- Training programmes conducted by industry experts/faculty
- Learning at Departmental Lab/ Institutional workshop/ start-ups cells of institute
- Internships offered by Government Organization/AICTE Registered industries on their portal
- In-house product development, micro/small/medium enterprise/online internship

Internship Diary/ Internship Workbook:

Students must maintain an Internship Diary/ Internship Workbook. The main purpose of maintaining diary/workbook is to cultivate the habit of documentation. The students should record in the daily training diary the day-to-day account of the observations, impressions, information gathered and suggestions provided, if any. The training diary/workbook should be signed every day by the assigned

supervisor.
Internship Diary/workbook and Internship Report should be submitted by the students along with attendance record and an evaluation sheet duly signed and stamped by the industry to the Institute immediately after the completion of the training.

Internship Work Evaluation:
The evaluation of these activities will be done by faculty mentor and Industry Supervisor based on- Overall compilation of internship activities, sub-activities, and the level of achievement expected, evidence needed to assign the points and the duration for certain activities.
Assessment and Evaluation shall be carried out jointly by appointed pair of examiners. Following are the suggested Rubrics for evaluation

Rubric	Parameters
R1	Evaluation of intern by industry supervisor
R2	Technical Knowledge
R3	Presentation Skills
R4	Viva Voce
R5	Report

Monitoring & evaluation of internship
The industrial training of the students will be evaluated in three stages:

- Evaluation by Industry.
- Evaluation by faculty supervisor on the basis of site visit(s) or periodic communication.
- Evaluation through seminar presentation/viva-voce at the Institute (This evaluation can be reflected through marks assigned by pair of examiners).

Evaluation through Seminar Presentation/Viva-Voce at the Institute-
The student will deliver a seminar based on his/her work carried out during internship, before the appointed panel constituted by the concerned department as per norms of the institute.
After completion of Internship, the student should prepare a report to indicate what he/she has observed and learnt in the training period. The report must have include Cover Page, Internship completion certificate , Internship Place Details- Company background, Supervisor details, Index, details of the work completed during internship, conclusions, Attendance Record, Acknowledgement, List of reference (Library books, magazines and other sources)

Feedback from internship supervisor(External and Internal)
Post internship, the faculty coordinator should collect feedback from industry about student with recommended parameters such as- Technical knowledge, Discipline, Punctuality, Commitment, Willingness to do the work, Communication skill, individual work, Team work, Leadership…..

K.K.Wagh Institute of Engineering Education and Research, Nashik
(Autonomous from Academic Year 2022-23)

Certification for Exit option after 1st Year of
Computer/IT/AI-DS/CSD
FYE2300118 :Web Designing using HTML & CSS

Teaching Scheme:	Credits	Examination Scheme:
Theory: 02 Hours/Week	02	In-Semester: 20 Marks
Practical: 02 Hours/Week	01	End-Semester : 30 Marks
		Term Work: 50 Marks

Course Objectives:

- To develop the skill & knowledge of Web page design.
- To know how one can function either as an entrepreneur or can take up jobs in the multimedia and Web site development studio and other information technology sectors

Course Outcomes:

On completion of the course, student will be able to–

1. Define the principle of Web page design
2. Define the basics in web design
3. Visualize the basic elements of HTML.
4. Introduce basics concept of CSS.
5. Develop the concept of web publishing

Course Contents

Unit I	**Web Design Principles**	**06Hrs**	**COs mapped – CO1**

Basic principles involved in developing a web site, Planning process , Five Golden rules of web designing , Designing navigation bar , Page design , Home Page Layout , Design Concept, Web Standards , Audience requirement.

Unit II	**Introduction to HTML**	**06Hrs**	**COs mapped – CO2**

What is HTML , HTML Documents , Basic structure of an HTML document , Creating an HTML document , Mark up Tags , Heading-Paragraphs , Line Breaks , HTML Tags

Unit III	**Elements of HTML**	**06Hrs**	**COs mapped – CO3**

Introduction to elements of HTML , Working with Text , Working with Lists, Tables and Frames , Working with Hyperlinks, Images and Multimedia , Working with Forms and controls

Unit IV	**Introduction to Cascading Style Sheets**	**06Hrs**	**COs mapped – CO4**

Concept of CSS , Creating Style Sheet , CSS Properties , CSS Styling(Background, Text Format, Controlling Fonts) , Working with block elements and objects , Working with Lists and Tables , CSS Id and Class , Box Model(Introduction, Border properties, Padding Properties, Margin properties) , CSS Advanced(Grouping, Dimension, Display, Positioning, Floating, Align,Pseudo class, Navigation Bar, Image Sprites, Attribute sector) , CSS Color , Creating page Layout and Site Designs.

Unit V	Web Publishing or Hosting	06Hrs	COs mapped – CO5
Creating the Web Site , Saving the site , Working on the web site , Creating web site structure , Creating Titles for web pages , Themes-Publishing websites			
Text Books			
1. Kogent Learning Solutions Inc. HTML 5 in simple steps Dreamtech Press 2. Steven M. Schafer HTML, XHTML, and CSS Bible, 5ed Wiley India 3. John Duckett Beginning HTML, XHTML, CSS, and JavaScript Wiley India			
Reference Books			
1. Ian Pouncey, Richard York Beginning CSS: Cascading Style Sheets for Web Design Wiley India 2. Kogent Learning Web Technologies: HTML, Javascript Wiley India			
E-Resources (E-books, Swayam/NPTEL Videos, Research Papers, URLs for Case studies, online tutorials, tools, blogs, Swayam/NPTEL courses etc):			
• https://archive.nptel.ac.in/courses/106/106/106106222/ • https://onlinecourses.swayam2.ac.in/aic20_sp11/preview			

List of Laboratory Experiments / Assignments		
Sr. No.	**Laboratory Experiments / Assignments**	**CO Mapped**
1	Write HTMLscript with elements, Tags and basic structure	**CO2, CO3**
2	Use multimedia components (Image, Video & Sound) in HTML document.	**CO2, CO3**
3	Design a webpage with List & Tables	**CO1, CO2, CO3**
4	Design a webpage with Hyper linking of webpages	**CO1, CO2, CO3**
5	Designa webpage using Frames,Forms and Controls	**CO1, CO2, CO3**
6	Create style sheetusing CSS properties and styling.	**CO4**
7	Design a webpage with Background, Text and Font& list properties.	**CO4**
8	Design a webpage with HTML elements box properties in CSS	**CO4**
9	Design a webpage with Positioning and Block properties in CSS	**CO4**
10	Design a webpage with cascading style sheet-Internal/External style sheet and publish	**CO4, CO5**
11	Mini Project - Develop a complete web application using HTML & CSS	**CO1, CO2, CO3, CO4, CO5**
Guidelines for Laboratory Conduction		
Use coding standards such as variable naming conventions, use of constants, proper indentation, comments and documentation For each assignment, students should write number of lines of code, various errors encountered and test cases used to test the program Students should incorporate functionalities mentioned in boldface in the assignments In addition to above eight assignments, students may develop an application in consultation with the teacher		

Guidelines for Student's Lab Journal
The laboratory assignments are to be submitted by students in the form of a journal. Journal consists of Certificate, table of contents, and handwritten write-up of each assignment (Title, problem statement, theory concepts in brief, algorithm, flowchart, test cases and conclusions). Program codes with sample outputs shall be submitted in soft form.
Guidelines for Term work Assessment
Continuous assessment of laboratory work shall be based on the overall performance of a student. Assessment of each laboratory assignment shall be based on rubrics that include R1- Timely completion (10) – Full marks if submitted in time, 5 marks otherwise, R2- Understanding of assignment (10) Full marks for accurate flowchart, algorithm / pseudo-code and working code R3- Use Coding standards, proper documentation, neatness of writeup (10) – 5 marks for coding standards and documentation and 5 marks for neatness of write up.

K.K.Wagh Institute of Engineering Education and Research, Nashik
(Autonomous from Academic Year 2022-23)

Certification for Exit option after 1st Year of
Computer/IT/AI-DS/CSD
FYE2300119 :Web development using PHP and MYSQL

Teaching Scheme:	Credits	Examination Scheme:
Theory: 02 Hours/Week	02	In-Semester: 20 Marks
Practical: 02 Hours/Week	01	End-Semester : 30 Marks
		Term Work: 50 Marks

Course Objectives:

- Understand basic programming used in PHP
- Learn to create apps using PHP & MySQL from scratch with practical examples
- Become a PHP/MySQL web developer to create small applications.
- Create a dynamic website using PHP and MySQL in no time

Course Outcomes:

On completion of the course, student will be able to–

1. Discuss basic programming concepts used in PHP
2. Use functions and arrays for web page development
3. Use fundamentals of PHP language like forms and files for web development
4. Apply advanced features of PHP language like sessions and cookiesfor web development
5. Develop applications with different technologies and database driven applications

Course Contents

Unit I	Introduction to PHP	06Hrs	COs Mapped – CO1

HTML, Introduction to PHP, Evaluation of Php, Basic Syntax, Defining variable and constant, Php Data type, Operator and Expression. Decisions and loop Making Decisions, Doing Repetitive task with looping, Mixing Decisions and looping with Html. Object-Oriented features of PHP .

Unit II	Functions and Arrays	06Hrs	COs Mapped – CO2

Functions– Call by value, Call by reference
Array- Anatomy of an Array, index based and Associative array, Accessing array Some useful Library function.
String- Accessing, String Searching, String Related Library functions

Unit III	Forms and Files	06Hrs	COs Mapped – CO3

Forms: Handling Html Form with Php Capturing Form and Generating File uploaded form, redirecting a form after submission.
Working with file and Directories, Opening and closing a file, Coping, renaming and deleting a file, working with directories, File Uploading & Downloading.

Unit IV	Advanced PHP	06Hrs	COs Mapped – CO4

Session and Cookie Introduction to Session Control, Session Functionality What is a Cookie, Setting Cookies with PHP.
Using Cookies with Sessions, Deleting Cookies, Registering Session variables, Destroying the variables and Session. Mail features

Unit V	PHP Databases	06Hrs	COs Mapped – CO5

Database Connectivity with MySql Introduction to RDBMS, Connection with MySql Database, Performing basic database operation(DML) (Insert, Delete, Update, Select), Setting query parameter, Executing queryJoin (Cross joins, Inner joins, Outer Joins, Self joins.)

Text Books

1. Learning PHP, MySQL, books by ‘ O’ riley Press 2. PHP Web Development with MySQL, Kenneth E. Marks, Published by: PHP [architect].
Reference Books
1. PHP & MySQL, Luke Welling, 2001 **2.** Murach’s PHP and MySQL, Joel Murach, 2010
E-Resources (E-books, Swayam/NPTEL Videos, Research Papers, URLs for Case studies, online tutorials, tools, blogs, Swayam/NPTEL courses etc):
1. https://www.udemy.com/course/php-mysql-certification-course-for-beginners **2. https://onlinecourses.swayam2.ac.in/aic20_sp32/preview**

List of Laboratory Experiments / Assignments		
Sr. No.	**Laboratory Experiments / Assignments**	**CO Mapped**
1	Set up a basic PHP and MySQL development environment on Linux and Windows.	**CO1**
2	Write PHP scripts using the basic functionality of the language.	**CO1**
3	Write PHP scripts that use strings, arrays and associative arrays	**CO2**
4	Write PHP scripts that use regular expressions to search and modify data.	**CO2**
5	Use the object-oriented features of PHP.	**CO1**
6	Write PHP scripts that read and write to files.	**CO3**
7	Write PHP scripts that query and update a MySQL database.	**CO5**
8	Use cookies and sessions for authentication in PHP.	**CO4**
9	Send email using a PHP function and PHP extensions.	**CO4**
10	Develop a simple web app for insert,update, delete and retrieve data from MYSQLdatabase	**CO5**
11	Mini Project - Develop a complete web application using PHP and MySQL	**CO1, CO2, CO3, CO4, CO5**
Guidelines for Laboratory Conduction		
Use coding standards such as variable naming conventions, use of constants, proper indentation, comments and documentation For each assignment, students should write number of lines of code, various errors encountered and test cases used to test the program Students should incorporate functionalities mentioned in boldface in the assignments In addition to above eight assignments, students may develop an application in consultation with the teacher		
Guidelines for Student's Lab Journal		
The laboratory assignments are to be submitted by students in the form of a journal. Journal consists of Certificate, table of contents, and handwritten write-up of each assignment (Title, problem statement, theory concepts in brief, algorithm, flowchart, test cases and conclusions). Program codes with sample outputs shall be submitted in soft form.		

Guidelines for Term work Assessment
Continuous assessment of laboratory work shall be based on the overall performance of a student. Assessment of each laboratory assignment shall be based on rubrics that include R1- Timely completion (10) – Full marks if submitted in time, 5 marks otherwise, R2- Understanding of assignment (10) Full marks for accurate flowchart, algorithm / pseudo-code and working code R3- Use Coding standards, proper documentation, neatness of writeup (10) – 5 marks for coding standards and documentation and 5 marks for neatness of write up.