

Programme Structure

**SCHOOL OF ENGINEERING &
TECHNOLOGY**

**Diploma
in
Computer Science &
Engineering**

Programme Code: 0101

Batch: 2024-2027

Vision of the University

To be recognized as an Institution of excellence, facilitating learning, fostering creativity, knowledge creation, innovations, consultancy and leadership in multiple areas to build a conscious community that will positively impact living beings for a sustainable future.

Mission of the University

1. Offers a wide range of Undergraduate and Post graduate Courses.

To create conducive environment for an interactive and application oriented experiential learning making the Institute a preferred destination for work and study.

2. Research, Innovation, Consultancy & Entrepreneurial Culture

To Foster creativity, research and innovation orientation in students and faculty in basic and applied areas in all of its disciplines, provide cost effective solutions and nurture entrepreneurial capabilities to accelerate growth.

3. Social Relevance with local actions on global thoughts

To act as a catalyst in social change by developing academic, social, political, technological, scientific, industrial and business leadership in the spirit “Think Globally and Act Locally”; by providing ample opportunities to develop team spirit, sportsmanship and love for culture and national heritage.

Core Values

**Integrity
Leadership
Diversity
Community**

Vision of the School of Engineering & Technology

To become a center of excellence for providing quality and value based education in the field of diploma engineering that will produce skilled technocrats to meet industry requirements.

Mission of the School of Engineering & Technology

- To provide technical knowledge and skills by using latest engineering tools.
- To facilitate industry-institute interaction to explore the industrial knowledge of the students.
- To inculcate ethical and professional values among students.
- To impart quality education to the students coming from rural parts and to conduct different curricular & co-curricular activities to enhance the academic.

Core Values

Integrity
Leadership
Diversity
Community

Programme Educational Objectives (PEO's)

- PEO 1.** To provide a strong foundation in computer science, programming, and computational problem-solving along with effective communication and entrepreneurial skills for addressing societal and industrial needs.
- PEO 2.** To equip students with sound scientific, mathematical, and engineering knowledge required to design, develop, and implement innovative software and hardware solutions for real-life problems.
- PEO 3.** To prepare diploma engineers with technical competence to face challenges in the IT industry, pursue higher education, and adapt to emerging technologies.
- PEO 4.** To instill lifelong learning, leadership qualities, teamwork, professional ethics, and social responsibility so that students remain updated with technological advancements and contribute effectively to society.

PROGRAMME OUTCOMES (POs)

- PO 1. Basic and Discipline-specific Knowledge:** Apply knowledge of mathematics, science, and core concepts of computer science and engineering to solve computing and engineering-related problems.
- PO 2. Problem Analysis:** Identify, analyze, and troubleshoot well-defined problems in the field of computer science using standard practices, coding techniques, and logical reasoning.
- PO 3. Design and Development of Solutions:** Design and implement software applications, databases, and simple system-level solutions to meet specified user needs.
- PO 4. Engineering Tools, Experimentation, and Testing:** Use modern programming environments, software tools, and testing frameworks to develop, debug, and validate computing solutions.
Tools, Experimentation and Testing:
- PO 5. Computing Practices for Society, Sustainability, and Environment:** Apply appropriate computing technologies considering ethical practices, cybersecurity, sustainability, and societal needs.
- PO 6. Project Management and Communication:** Apply project management skills individually and in teams, demonstrating effective communication in both technical and non-technical contexts.
- PO 7. Lifelong Learning:** Recognize the need for lifelong learning and acquire the ability to keep pace with emerging tools, technologies, and innovations in the field of computer science and engineering.

PROGRAMME SPECIFIC OUTCOMES (PSOs)

- PSO 1.** An Apply programming concepts, algorithms, and data structures to design, develop, test, and maintain reliable software applications.
- PSO 2.** An Demonstrate practical knowledge of computer hardware, operating systems, networks, and databases to configure, manage, and troubleshoot computing systems.
- PSO 3.** Design and deploy web-based applications and adapt to emerging areas like mobile computing, cloud technologies, and cyber security.
- PSO 4.** An Apply technical skills, teamwork, communication, and ethical values to excel in industry, pursue higher education, or initiate entrepreneurial ventures.



SDGI GLOBAL UNIVERSITY, GHAZIABAD

SCHOOL OF ENGINEERING & TECHNOLOGY

SCHEME OF STUDIES AND EVALUATION FOR DIPLOMA IN COMPUTER SCIENCE & ENGINEERING

W.E.F. Session : 2025-26

(Batch: 2024-2027)

Semester - III

S. No	Status	Paper Code	Subjects	Study Scheme Lec / Week			Hours	Credits	CIE	ESE	Total	Pass Marks
				L	T	P						
1	DC	D06AS24301	Applied Mathematics-III	3	1	-	4	3	50	50	100	40
2	DC	D060124302	Data Structure Using C	3	1	-	4	3	50	50	100	40
3	DC	D060124303	Fundamentals of Data Science	3	0	-	3	3	50	50	100	40
4	OE	D061024304	*Digital Electronics	3	1	-	4	3	50	50	100	40
5	VAC	D06VA24305	*Human Values & Professional Ethics	3	0	-	3	3	50	50	100	40
6	DC	D060124352	Data Structure Using C Lab	-	-	4	4	2	60	40	100	40
7	DC	D060124353	Fundamentals of Data Science Lab	-	-	4	4	2	60	40	100	40
8	OE	D061024354	*Digital Electronics Lab	-	-	2	2	1	60	40	100	40
Total				15	3	10	28	20	430	370	800	320

*Subjects denotes the subject that are common with other Diploma Programs

Semester 3rd



DETAILED CONTENTS

UNIT 1: Matrices **10 Hours**

- 1.1 Algebra of Matrices, Inverse Addition, Multiplication of matrices, Null matrix and a unit matrix, square matrix, Symmetric, Skew symmetric, Hermitian, Skew hermit ion, Orthogonal, Unitary, diagonal, and Triangular matrix, Determinant of a matrix. Definition and Computation of inverse of a matrix
- 1.2 Elementary Row/Column Transformation, Meaning and use in computing inverse and rank of a matrix
- 1.3 Linear Dependence, Rank of a Matrix: Linear dependence/independence of vectors, Definition, and computation of rank of matrix. Computing rank through determinants, Elementary row transformation and through the concept of a set of independent vectors, Consistency of equations
- 1.4 Eigen Pairs, Cayley-Hamilton Theorem: Definition and evaluation of Eigen values and Eigen vectors of a matrix of order two and three, Cayley-Hamilton theorem (without Proof) and its verification, use in finding inverse and powers of a matrix

UNIT 2: Differential Calculus **08 Hours**

- 2.1 Function of two variables, identification of surfaces in space, conicoid
- 2.2 Partial Differentiation: Directional derivative, Gradient, Use of gradient f, Partial derivatives, Chain rule, Higher order derivatives, Euler’s theorem for homogeneous functions, Jacobians.
- 2.3 Vector Calculus: Vector function, Introduction to double and triple integral, differentiation and integration of vector functions, gradient, divergence and curl, differential derivatives.

UNIT 3: Differential Equation **10 Hours**

- 3.1 Formation, Order, Degree, Types, Solution: Formation of differential equations through physical, geometrical, mechanical, and electrical considerations, Order, Degree of a differential equation, Linear, nonlinear equation.
- 3.2 First Order Equations: Variable separable, equations reducible to separable forms, Homogeneous equations, equations reducible to homogeneous forms, Linear and Bernoulli form exact equation and their solutions.
- 3.3 Higher Order Linear Equation: Property of solution, Linear differential equation with constant coefficients (PI for $X= e^{ax}$, $\text{Sin}ax$, $\text{Cos}ax$, X^n , $e^{ax}V$, XV)
- 3.4 Simple Applications: LCR circuit, Motion under gravity, Newton's law of cooling, radioactive decay, Population growth, Force vibration of a mass point attached to spring with and without damping effect. Equivalence of electrical and mechanical system

UNIT 4: Integral Calculus-II **10 Hours**

- 4.1 Beta and Gamma Functions: Definition, Use, Relation between the two, their use in evaluating integrals.

4.2 Fourier Series: Fourier series of $f(x)$, $-n < x < n$, Odd and even function, Half range series.

4.3 Laplace Transform: Definition, Basic theorem and properties, Unit step and Periodic functions, inverse laplace transform, Solution of ordinary differential equations

UNIT 5: Probability and Statistics

08 Hours

5.1 Probability: Introduction, Addition and Multiplication theorem and simple problem

5.2 Distribution Discrete and continuous distribution, Binomial Distribution, Poisson distribution, Normal Distribution.

TEXT BOOKS

1. **Applied Mathematics-III** by Ajay Kumar, Jai Prakash Nath Publications, Meerut.
2. **Applied Mathematics-III** by P.K. Gupt, Pooja Yadav, Asian Publishers, Muzaffarnagar.

REFERENCE BOOKS

1. **Elementary Engineering Mathematics** by BS Grewal, Khanna Publishers, New Delhi
2. **Engineering Mathematics, Vol I & II** by SS Sastry, Prentice Hall of India Pvt. Ltd.,
3. **Applied Mathematics-III** by Chauhan and Chauhan, Krishna Publications, Meerut.
4. **Applied Mathematics-II** by Kailash Sinha and Varun Kumar; Aarti Publication, Meerut.



JUSTIFICATION

Justifying the inclusion of Data Structures using C in a syllabus can be based on several key points, considering both educational outcomes and practical applications. Here are some arguments for its inclusion: Foundational Knowledge, Practical Application, Programming Language, Problem-Solving Skills.

LEARNING OUTCOMES

Learning outcomes for a course or module on Data Structures using C typically include the following:

1. Comprehend fundamental data structures and their operations.
2. Implement and manipulate arrays.
3. Understand the concepts of stack and queue.

DETAILED CONTENTS

UNIT 1: Fundamental Notations & Arrays	08 Hours
1.1 Fundamental Notations: Problem solving concept top down and bottom-up design, structured programming, Concept of data types, variables and constants, Concept of pointer variables and constants, Categories of Data structure	
1.2 Arrays: Concept of Arrays, Storage representation of multi-dimensional arrays, Operations on arrays with Algorithms (searching, traversing, inserting, deleting)	
UNIT 2: Linked Lists	08 Hours
2.1 Introduction to linked list, Representation of linked lists in Memory, Operations on linked list (Insertion, deletion, and traversals), Application of linked lists 3.5 Doubly linked lists, Operations on doubly linked lists (Insertion, deletion and traversals)	
UNIT 3: Stacks, Queues and Recursion	08 Hours
3.1 Stack: Introduction to stacks, Representation of stacks, Implementation of stacks, Applications of stacks	
3.2 Queue: Introduction to queues, Implementation of queues, Circular Queues, De-queues, Application of Queues	
3.3 Recursion: Introduction to Recursion	
UNIT 4: Trees and Graphs	06 Hours
4.1 Trees: Concept of Trees, Representation of Binary tree in memory, Traversing Binary Trees (Pre order, Post order and In order), Searching, inserting and deleting binary search trees, Introduction to Heap, Application of Trees	
4.2 Graphs: Introduction to Graph, Basic Operations, Depth First Search, Breadth First Search	
UNIT 5: Sorting and searching	06 Hours
5.1 Introduction to sorting and searching, Search algorithm (Linear and Binary),	

Sorting algorithms (Bubble Sort, Insertion Sort, Quick Sort, Selection Sort, Merge Sort, Heap Sort)

TEXT BOOKS

1. **Data Structure using 'C'** by Satish Gupta; Jai Prakash Nath Publications, Meerut

REFERENCE BOOKS

1. **Data Structure using C** by Robert Kruse; Prentice Hall of India
2. **Data Structure through C** by Yashwant Kanekar; BPB Publications
3. **Data structures – Schaum's Outline Series** by Lipschutz; McGraw Hill Education Pvt Ltd, New Delhi
4. **Data Structure using C** by ISRD Group; Tata McGraw Hills Education Pvt Ltd, New Delhi



JUSTIFICATION

The demand for advanced web designers is consistently high due to the digital transformation across various sectors. Companies seek professionals with cutting-edge skills to create dynamic, responsive, and user-friendly websites. The web design field constantly evolves with new technologies, tools, and frameworks. An advanced syllabus ensures students are up-to-date with the latest trends and best practices.

LEARNING OUTCOMES

Learning outcomes for a course or module on Advance Web Designing typically include the following:

1. Advanced HTML and CSS
2. JavaScript and Frameworks

DETAILED CONTENTS

UNIT 1: Introduction to HTML	06 Hours
1.1 Brief Introduction of HTML, HTML Tags, Basic structure of an HTML document, Heading-Paragraphs, Line Breaks	
1.2 Elements of HTML: Introduction to elements of HTML, Working with Text, Formatting Tags, Working with Lists, Tables and Frames, Working with Hyperlinks, Images and Multimedia, Working with Forms and controls, Marquee Elements	
UNIT 2: Introduction to Cascading Style Sheets	10 Hours
2.1 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) Navigation Bar, CSS Colour, Creating page Layout and Site Designs.	
UNIT 3: BOOTSTRAP	08 Hours
3.1 Fundamentals of implementing responsive web design. Use Balsamiq to mockup and wireframe websites, The fundamentals of UI design for websites, How to install the Bootstrap framework	
3.2 Understanding the Bootstrap grid layout system, how to use bootstrap containers to layout your website easily, use other Bootstrap components such as buttons, adding symbols using Font Awesome, Bootstrap carousels.	
3.3 Add Bootstrap cards to your website. Using Bootstrap navigation bars.	
UNIT 4: JAVA SCRIPT	08 Hours
4.1 The Fundamentals of Code, Starting code with alerts and prompts, Understand Variables and Data Types in JavaScript Variable naming in JS, Working with strings and numbers Randomisation and logical operators Loops, collections and Conditionals ,Functions and invocation patterns Discussion of ECMAScript Intermediate JavaScript, JS Expressions, Operators, Statements and Declarations, Object-Oriented Programming JS Objects and Prototypes ,`This`, Scope and Closures Objects and Prototypes Refactoring and Debugging	
UNIT 5: REACT JS	10 Hours

- 5.1 Learn front-end development with React, understand when and how to use React Components, Props and work with them, JSX and understand JSX syntax, React DOM, State Management in React, React Hooks, Conditional rendering in React
- 5.2 Understand the difference between class and functional components, Event Handling in React

REFERENCE BOOKS

1. Head First HTML and CSS: A Learner's Guide to Creating Standards-Based Web Pages , O Reilly Publications by Elisabeth Robson Eric Freeman
2. Head First JavaScript Programming, O Reilly Publications by Eric FREEMAN
3. Web Technologies, Black Book ,Kogent Learning Solutions Inc
4. Developing Web Applications, 2ed ,Wiley Publications, M.T.Savaliya



SCHOOL OF ENGINEERING & TECHNOLOGY

ELECTIVE – FUNDAMENTALS OF DATA SCIENCE

(D060124303)

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JUSTIFICATION

"Fundamentals of Data Science" course involves covering key concepts and skills that provide a solid foundation in the field. Understanding the scope, applications, and significance of data science is crucial for setting the context. This foundation helps students appreciate the relevance of the field and its impact on various industries.

LEARNING OUTCOMES

Defining clear learning outcomes for a "Fundamentals of Data Science" course helps ensure that students gain the necessary skills and knowledge. Here are some suggested outcomes for the course:

1. Understanding Data Science Concepts
2. Data Collection and Acquisition
3. Scores and Rankings, Statistical Analysis

DETAILED CONTENTS

UNIT 1: Introduction To Data Science:	06 Hours
1.1 Benefits and uses – facets of data – Data Science Process: Overview – Defining research goals – Retrieving data – Data preparation – Exploratory Data analysis – build the model– presenting findings and building applications –	
1.2 Data Mining – Data Warehousing – Basic Statistical descriptions of Data	
UNIT 2: Mathematical Preliminaries, Data Mugging:	08 Hours
2.1 Types of Data – Types of Variables -Describing Data with Tables and Graphs – Describing Data with Averages – Describing Variability – Normal Distributions and Standard (z) Scores	
2.2 Probability, Descriptive Statistics, Correlation Analysis Properties of Data, Languages for Data Science, Collecting Data, Cleaning Data, Crowdsourcing	
UNIT 3: Scores and Rankings, Statistical Analysis:	08 Hours
3.1 Developing Scoring Systems, Z-scores and Normalization, Advanced Ranking Techniques	
3.2 Sampling from Distributions, Statistical Distributions, Statistical Significance, Permutation Tests and P-values.	
UNIT 4: Visualizing Data, Mathematical Models:	06 Hours
4.1 Exploratory Data Analysis, Developing a Visualization Aesthetic, Chart Types, Great Visualizations	
4.2 Philosophies of Modelling, A Taxonomy of Models, Baseline Models, Evaluating Models, Evaluation Environment.	
UNIT 5: Supervised Learning:	08 Hours
5.1 Linear Regression, Better Regression Models, Regression as Parameter Fitting, Simplifying Models through Regularization Classification and Logistic Regression, Issues in Logistic Classification, Naive Bayes, Decision Trees Classifiers	

REFERENCE BOOKS

1. **Steven S. Skiena**, “The Data Science Design Manual”, Springer 2017
Head First JavaScript Programming, O Reilly Publications by Eric FREEMAN
2. **Rachel Schutt & O’neil**, “Doing Data Science”, Straight Talk from The Frontline O’REILLY, ISBN:978-1-449-35865-5, 1st edition, October 2013.

REFERENCE BOOKS

1. **Joel Grus**,” Data Science from Scratch” First Edition, April 2015. Gareth James, Daniela Witten, Trevor Hatie, Robert Tibhirani , “An Introduction to Statistical Learning-with Applications in R“, 2013
2. **Jure Leskovek**, Anand Rajaraman and Jeffrey Ullman. Mining of Massive Datasets. v2.1, Cambridge University Press. 2 edition (30 September 2014)
3. **R Programming for Data Science**, Roger D. Peng, LeanPub, 2015.



SCHOOL OF ENGINEERING & TECHNOLOGY

E-COMMERCE AND DIGITAL MARKETING

(D060824303)

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JUSTIFICATION

This course explores the fundamentals and advanced strategies of social media and content marketing. Students will learn how to develop effective social media campaigns, create compelling content, and measure the impact of their marketing efforts.

LEARNING OUTCOMES

After completing this course, students will be able to:

1. Understand the role of social media in modern marketing.
2. Develop strategies for different social media platforms.
3. Create and manage content that engages and converts.
4. Analyse and measure social media and content marketing performance.
5. Utilize tools and technologies for social media and content marketing.

DETAILED CONTENTS

UNIT 1: Introduction Electronics Commerce	10 Hours
1.1 Electronics Commerce, advantages, and disadvantages. E-Commerce Business model B2B, B2C, C2C, E-Governance. Four C's (Convergence, collaborative, computer content management and call centre), Supply Chain Management.	
UNIT 2: E-Commerce Payment	6 Hours
2.1 Payment Gateway, Modes of Electronic Payment, Threats & protections for E-commerce payment system.	
UNIT 3: Principles of Digital Marketing	10 Hours
3.1 Defining Digital Marketing, Setting Digital Marketing Objectives, Set of activities of digital marketing: Search Engine Optimization, SEO, Search Engine Marketing –Google AdWords, Social Media Marketing: Facebook, LinkedIn, YouTube, Display Advertising – Contextual, Behavioural, Targeted, Content Marketing & Blogging.	
3.2 Lead Generation: Marketing Offer – Attractive / Relevant Offer, Landing Page – Offer's details with form, Conversion Page – Thank you page, Email Marketing, Video Marketing, Responsive Design, Google Analytics.	
UNIT 4: Search Engine Optimization	15 Hours
4.1 What is SEO? Why SEO, How Search Engine works? Essential SEO guidelines for website owner, designer, blogger and content writer: Keyword Research - Creating Content Hierarchy, Brainstorming, Google Keyword Planner.	
4.2 Internal Linking – Site Navigation, How Google reads our pages? Google AdWords, Content Structuring, Understanding Quality Score, Finding and selecting the right Keywords, Keywords Matching Options, Campaign Setup procedure, Ads and Ad Groups, Organizing Ad Groups.	
UNIT 5: Social Media Marketing	12 Hours
5.1 Google Analytics, Understanding Dashboard – Audience Advertising Traffic Source Content Conversions, Analytics Reporting, Defining Business Goals and Objectives.	
5.2 <u>Knowing your Audience - Google Alerts – Monitoring your brands, Facebook</u>	

Graph Search – SEO for Facebook, Facebook Fans.

- 5.3** Emerging trends in social media and content marketing, The role of AI and automation, Career paths in social media and content marketing, Building a personal brand in the digital space.

RECOMMENDED BOOKS

1. **"Social Media Marketing: A Strategic Approach"** by Melissa Barker, Donald Barker, and Nicholas Bormann.
2. **Digital Marketing by Vandana Ahuja**, published by Oxford Publication
3. **Fundamentals of Digital Marketing by Puneet Bhatia**, published by Pearson

TEXT BOOKS

1. **"Social Media Marketing: A Strategic Approach"** by Melissa Barker, Donald Barker, and Nicholas Bormann.
2. **Fundamentals of Digital Marketing by, Praveen S.K.**



JUSTIFICATION

Creating a syllabus for Digital Electronics & Logic Design involves outlining a structured plan that ensures students gain a comprehensive understanding of both fundamental concepts and practical applications. Here is a justification for including certain topics in the syllabus: Introduction to Digital Electronics, Boolean Algebra and Logic Gates, Digital System Design.

LEARNING OUTCOMES

For a course on Digital Electronics and Logic Design, here are some common learning outcomes you might expect:

1. Understand the basic principles of digital electronics and logic design.
2. Design and implement digital circuits using basic logic gates (AND, OR, NOT, NAND, NOR, XOR, XNOR).

DETAILED CONTENTS

UNIT 1	Introduction and Number System	10 Hours
1.1	Distinction between Analog and Digital signals, Applications, and advantages of Digital Signals	
1.2	Number System: Binary, Octal and Hexadecimal number system: conversion from decimal and hexadecimal to binary and vice-versa, Binary addition and subtraction including binary points. 1's and 2's complement method of addition/subtraction.	
UNIT 2	Logic Gates and Simplifications	08 Hours
2.1	Concept of negative and positive logic, Definition, symbols and truth tables of NOT, AND, OR, NAND, NOR, EXOR Gates, NAND & NOR as universal gates, SSI, MSI, LSI, VLSI, Propagation delay, Noise Margin, Fan In, Fan Out, Power dissipation, Basic Logic Gate using NMOS, PMOS, CMOS.	
2.2	Postulates of Boolean Algebra, De Morgan's Theorems, Implementation of Boolean (logic) equation with gates, Karnaugh map (upto 4 variables) and simple application in developing combinational logic circuits.	
UNIT 3	Arithmetic & Combinational Circuits, Counters	10 Hours
3.1	Half adder and Full adder circuit, design and implementation, Half subtractor and Full subtractor or Circuit, design and implementation. Introduction to combinational circuit, Multiplexer, De-multiplexer, Encoder, Decoder block diagram and Circuit, 7 segment decoder, BCD Encoder Circuit. Introduction to Asynchronous and Synchronous counters, Binary counters, Divide by N ripple counters, Decade counter, Ring counter, Twisted Ring Counter.	
UNIT 4	Sequential Circuit and Shift Registers	8 Hours

- 4.1** Introduction, comparison between combinational and sequential circuit, concept and types of latches with their working and applications, operation using waveforms and truth tables of RS, T, D, Master/Slave JK flip flops, Difference between a latch and a flip flop.

Introduction and basic concepts including shift left and shift right.

- a) Serial in parallel out, serial in serial out, parallel in serial out, parallel in parallel out.
- b) Universal shift register

UNIT 5 A/D and D/A Converters, Semiconductor Memories

08 Hours

- 5.1** Working principle of A/D and D/A converters, Applications of A/D and D/A converter, Memory organization, classification of semiconductor memories (RAM, ROM, PROM, EPROM, EEPROM), static and dynamic RAM.

TEXT BOOKS

1. **Digital Electronics** by Ashish Tripathi, Jai Prakash Nath Publications, Meerut.

REFERENCE BOOKS

1. **Digital Logic Designs** by Morris Mano, Prentice Hall of India, New Delhi
2. **Digital Electronics** by RP Jain, Tata McGraw Hill Education Pvt Ltd, New Delhi



SCHOOL OF ENGINEERING & TECHNOLOGY

HUMAN VALUES & PROFESSIONAL ETHICS

(D06VA24305)

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JUSTIFICATION

Universal human values are fundamental principles that are believed to transcend cultural, geographical, and personal differences. They serve as a common ground for understanding and fostering human dignity, well-being, and cooperation across diverse societies.

LEARNING OUTCOMES

For a course on Universal human values, here are some common learning outcomes you might expect:

1. Gain insight into universal values such as respect, compassion, integrity, and fairness, and recognize their importance in personal and societal contexts.
2. Develop the ability to analyze ethical dilemmas and moral questions through a framework that prioritizes universal human values.

DETAILED CONTENTS

UNIT 1: Course Introduction - Need, Basic Guidelines, Content and Process for Value Education	08 Hours
1.1 Understanding the need, basic guidelines, content, and process for Value Education.	
1.2 Self-Exploration–what is it? – its content and process; ‘Natural Acceptance’ and Experiential Validation- as the mechanism for self-exploration.	
1.3 Right understanding, Relationship and Physical Facilities- the basic requirements for fulfillment of aspirations of every human being with their correct priority.	
1.4 Understanding Happiness and Prosperity correctly- A critical appraisal of the current scenario.	
UNIT 2: Understanding Harmony in the Human Being - Harmony in Myself!	08 Hours
2.1 Understanding human being as a co-existence of the sentient ‘I’ and the material the Body	
2.2 Understanding the needs of Self (‘I’) and ‘Body’ - Sukh and Suvidha.	
2.3 Understanding the Body as an instrument of ‘I’ (I being the doer, seer and enjoyer).	
2.4 Understanding the harmony of I with the Body: Sanyam and Swasthya; correct appraisal of Physical needs, meaning of Prosperity in detail	
UNIT 3: Understanding Harmony in the Family and Society- Harmony in Human-Human Relationship	08 Hours
3.1 Understanding Harmony in the family – the basic unit of human interaction.	
3.2 Understanding values in human-human relationship; meaning of Nyaya and program for its fulfillment to ensure Ubhay-tripti; a. Trust (Vishwas) and Respect (Samman) as the foundational values of relationship.	
3.3 Understanding the meaning of Vishwas; Difference between intention and competence.	

- 3.4 Understanding the meaning of Samman, Difference between respect and differentiation; the other salient values in relationship.
- 3.5 Understanding the harmony in the society (society being an extension of family): Samadhan, Samridhi, Abhay, Sah-astitvaas comprehensive Human Goals
- 3.6 Visualizing a universal harmonious order in society- Undivided Society (Akhand Samaj)

UNIT 4: Understanding Harmony in the Nature and Existence - Whole existence as Coexistence 06 Hours

- 4.1 Understanding the harmony in the Nature.
- 4.2 Interconnectedness and mutual fulfillment among the four orders of nature recyclability and self-regulation in nature.
- 4.3 Understanding Existence as Co-existence (Sah-astitva) of mutually interacting units in all-pervasive space.
- 4.4 Holistic perception of harmony at all levels of existence.

UNIT 5: Implications of the above Holistic Understanding of Harmony on Professional Ethics 06 Hours

- 5.1 Natural acceptance of human values.
- 5.2 Basis for Humanistic Education, Humanistic Constitution and Humanistic Universal Order.
- 5.3 Strategy for transition from the present state to Universal Human Order:
 - a) At the level of individual: as socially and ecologically responsible engineers, technologists, and managers.
 - b) At the level of society: as mutually enriching institutions and organizations.
- 5.4 To inculcate Human Values among Students: The Role of self, Parents and Teachers.

TEXT BOOKS

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1. **Universal Human Values** by Ankit Kumar, Jai Prakash Nath Publications, Meerut.
 2. **Universal Human Values** by Archana Sharma & Iftekhhar Ahmed, Asian Publisher, Muzaffarnagar.

REFERENCE BOOKS

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1. R.R Gaur, R Asthana, G P Bagaria, **A foundation course in Human Values and professional Ethics**, Excel books, New Delhi
 2. B L Bajpai, 2004, **Indian Ethos and Modern Management**, New Royal Book Co., Lucknow. Reprinted 2008.
 3. PL Dhar, RR Gaur, 1990, **Science and Humanism**, Commonwealth Publishers.



SCHOOL OF ENGINEERING & TECHNOLOGY

DATA STRUCTURES USING C LAB (D060124352)

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DETAILED CONTENTS

- 1 Write a C program for addition of two matrices using functions.
- 2 Write a C program for multiplication of two matrices.
- 3 Write a C program to demonstrate insertion and deletion of elements in linked list.
- 4 Write a C program to demonstrate insertion and deletion of elements in doubly linked list.
- 5 Write a C program to demonstrate push and pop operation in stack.
- 6 Write a C program for inserting and deleting elements in queue.
- 7 Write a C program for inserting and deleting elements in circular queue.
- 8 Write a C program to find factorial of a given number with recursion and without recursion.
- 9 Write a C program to print Fibonacci series with recursion and without recursion.
- 10 Write a C program for demonstrating pre-order, post-order and in-order traversal of binary tree.
- 11 Write a C program to demonstrate the selection sort technique.
- 12 Write a C program to demonstrate the bubble sort technique.
- 13 Write a C program to demonstrate the quick sort technique
- 14 Write a C program to demonstrate the merge sort technique
- 15 Write a C program for applying the binary search procedures to search an element in a given list.
- 16 Write a C program for applying the linear search procedures to search an element in a given list.



DETAILED CONTENTS

1. Html program to display a table with 5 rows and 4 columns. Provide appropriate heading to the form.
2. Create an HTML Page to display the following table:

First Name	Last Name	Points
Eve	Jackson	94
John	Doe	80
Adam	Johnson	67
Jill	Smith	50

3. HTML page to demonstrate a Clickable image.
4. Create a hyperlink in html which when clicked links to www.google.com in a new window.
5. HTML program segment that contains hypertext links from one document to another.
6. Html code to design multiple lists.
7. HTML code for creating the following output:

Online Courses	
1. Web Programming	<ul style="list-style-type: none"> ▪ HTML5 ▪ CSS3 ▪ JavaScript
2. PHP Framework	<ul style="list-style-type: none"> ▪ Laravel ▪ Cupcake ▪ Slim
25% Discount for first ten students Contact us on 9900990000	

8. HTML code to design complex nested list.
9. Create a webpage divide the webpage into six frames in one frame create five links that will display different HTML forms in the remaining five frames respectively.
10. Design a html form for o level registration.
11. Html code to develop a web page having two frames that divide the page into two equal rows and divide the first row into equal columns.
12. CSS code to create 3 different colors box which partially overlapped to each other.



DETAILED CONTENTS

- 1 Write a program to create a 2D Numpy array and perform basic operations such as addition, subtraction, multiplication, and division.
- 2 Write a program to create a 3D Numpy array and extract a 2D slice from it.
- 3 Write a program to use Numpy's mean, median, and std functions to calculate the mean, median, and standard deviation of a Numpy array.
- 4 Write a program to create a pandas Data Frame from a CSV file and display the first few rows.
- 5 Write a program to select specific columns from a pandas Data Frame and create a new Data Frame.
- 6 Write a program to use pandas' group by function to group a Data Frame by a specific column and calculate the mean of another column.
- 7 Write a program to create a line plot using Matplotlib to display the relationship between two variables.
- 8 Write a program to create a scatter plot using Matplotlib to display the relationship between two variables.
- 9 Write a program to create a bar chart using Matplotlib to display the frequency of different categories.
- 10 Write a program to calculate the correlation coefficient between two variables using pandas.
- 11 Write a program to calculate the Spearman rank correlation coefficient between two variables using pandas.
- 12 Write a program to perform simple linear regression using scikit-learn to predict a continuous outcome variable.



SCHOOL OF ENGINEERING & TECHNOLOGY

E-COMMERCE & DIGITAL MARKETING LAB

(D060824353)

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JUSTIFICATION

The diploma holder in Computer Science & Engineering needs to have knowledge of Digital Marketing Techniques, including search engine optimization (SEO), social media marketing and content writing. They should possess the knowledge of Digital Marketing Technology.

LEARNING OUTCOMES

After completing this course, students will be able to:

1. Identify core concepts of Digital Marketing and the role of Digital Marketing in Business.
2. Understand how to use digital marketing to increase sales and grow their business.
3. Hands on experience in using Analytics Tools e.g.: Google Analytics for report extraction and campaign measurement.
4. Understand the opportunities for deploying emerging digital marketing media and techniques.
5. Implement online campaigns for your business and marketing problems within the organization by learning Ad Words Campaign Management.

DETAILED CONTENTS

- 1 Create SEO Friendly Web Pages
- 2 Submit Website in various search Engines
- 3 Content Writing
- 4 Develop a Facebook Customized Page Tab
- 5 Create and write a blog
- 6 Write an email newsletter
- 7 Make a video and YouTube Channel
- 8 Create Google Ad Words Account and make use of Keyword Planner
- 9 Create and Use Google Analytics Account
- 10 Create “refer-a-friend” or “bookmark this page” links on your site
- 11 Understanding Plagiarism Checker tools
- 12 Understanding various SEO Tools like woo rank, seositecheckup, seoquake, similar web, siteliner, etc



**DETAILED
CONTENTS**

- 1 Verification and interpretation of truth tables for AND, OR, NOT NAND, NOR and Exclusive OR (EXOR) and Exclusive NOR (EXNOR) gates.
- 2 Realisation of logic functions with the help of NAND or NOR gates.
- 3
 - Design of a half adder using XOR and NAND gates and verification of its operation.
 - Construction of a full adder circuit using XOR and NAND gates and verify its operation.
- 4 Verification of truth table for positive edge triggered, negative edge triggered, level triggered IC flip-flops (At least one IC each of D latch, D flip-flop, JK flip-flops).
- 5 Verification of truth table for encoder and decoder ICs, Mux and DeMux.
- 6 To design a 4-bit SISO, SIPO, PISO, PIPO shift registers using JK/D flip flops and verification of their operation.
- 7 To design a 4-bit ring counter and verify its operation.
- 8 Use of Asynchronous Counter ICs (7490 or 7493).

