Study Scheme: PGDCA
SEMESTER- II
Academic Session- 2025-26 Onwards

Core Courses:

Sr. No.	Paper Code	Title of Paper	L+T	P	External Marks	Internal Marks	Total	Credits
1	PDCA1201T	Relational Database Management System	4+0	0	70	30	100	4
2	PDCA1202T	Web Development using Python and Django	4+0	0	70	30	100	4
3	PDCA1203T	Web Technology	4+0	0	70	30	100	4
4	PDCA1204P	Programming lab-III (based on paper PDCA1202T)	0	4	35	15	50	2
5	PDCA1205P	Programming lab-IV (based on paper PDCA1203T)	0	4	35	15	50	2

SEC and AEC Courses:

Sr. No.	Paper Code	Title of Paper	L+T	P	External Marks	Internal Marks	Total	Credits
4	PDCA1206P	Data Analysis using Spreadsheet	0	4	35	15	50	2
5	PDCA1207T	Digital Marketing	2	0	35	15	50	2
TOTAL					**350**	**150**	**500**	**20**

SEMESTER - II

PDCA1201T: RELATIONAL DATABASE MANAGEMENT SYSTEM

Total Marks: 100
External Examination: 70
Internal Assessment: 30
Credits: 4

Maximum Time: 3 Hrs.
Minimum Pass Marks: 40%
Lectures to be delivered: 55-60Hrs
L: 4 T:0 P: 0

Course Outcomes:

- The students will be able to Gain the knowledge and understanding of Database analysis and design.
- Gain the knowledge of the processes of Database Development and Administration.
- Understand the functional dependencies and design of the database Understand the concept of Normalization

Instructions for the Paper-Setter
The question paper will consist of three sections A, B & C. Sections A & B will have four questions from the respective sections of the syllabus and will carry 30% marks each. Section C will have 6-12 short answer type questions which will cover the entire syllabus uniformly and will carry 40% marks in all.

Instructions for Candidates
Candidates are required to attempt five questions in all selecting two questions from each sections A and B and compulsory question of section C.

SECTION – A

Introduction: Database Approach, Characteristics of a Database Approach, Database System Environment. Roles in Database Environment: Database Administrators, Database Designers, End Users, Application Developers. Database Management Systems: Definition, Characteristics, Advantages of Using DBMS Approach, Classification of DBMS. Architecture: Data Models, Database Schema and Instance, Three Schema Architecture, Data Independence - Physical and Logical data Independence. Database Conceptual Modeling by E-R model: Concepts, Entities and Entity Sets. Attributes, Mapping Constraints, E-R Diagram, Weak Entity Sets, Strong Entity Sets.

SECTION – B

Relational Data Model: Concepts and Terminology. Constraints: Integrity Constraints, Entity and Referential Integrity constraints. Keys: Super Keys, Candidate Keys, Primary Keys, Secondary Keys and Foreign Keys. Database Design: Problems of Bad Database Design, Normalization: Functional Dependency, Full Functional Dependency, Partial Dependency, Transitive Dependency,

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Normal Forms- 1NF, 2NF, 3NF, BCNF, Multi-valued Dependency, Join Dependency and Higher Normal Forms- 4NF, 5NF.

SQL Fundamentals: Introduction to SQL: Syntax and structure, Data Definition Language (DDL): CREATE, ALTER, DROP, Data Manipulation Language (DML): INSERT, UPDATE, DELETE; Advanced SQL Queries: SELECT statements: WHERE, ORDER BY, GROUP BY; Joins: INNER, OUTER, CROSS, SELF, Sub queries and Common Table Expressions (CTEs).

SQL Queries: Applying Integrity Constraints, Functions, Procedures and Packages, Using Cursors and Triggers.

PL/SQL: Introduction to PL/SQL, Cursors- Implicit & Explicit, Procedures, Functions & Packages, Database Triggers.

Text and Readings:

- Elmasry Navathe, "Fundamentals of Database System", Pearson Education.
- T. Connolly, C Begg, "Database Systems". Pearson Education.
- Jeffrey D. Ullman, "Principles of Database Systems", Galgotia Publications.
- Henry F. Korth, A. Silberschhatz, "Database Concepts," Tata McGraw Hill.
- C.J. Date, "An Introduction to Database Systems". Pearson Education.
- Naveen Parkash, "Introduction to Database Man.

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PDCA1202T: WEB DEVELOPMENT USING PYTHON AND DJANGO

Total Marks: 100
External Examination: 70
Internal Assessment: 30
Credits: 4

Maximum Time: 3 Hrs.
Minimum Pass Marks: 40%
Lectures to be delivered: 55-60Hrs.
L: 4 T: 0 P: 0

Course Outcomes:

- Understand the basics of Python programming language
- Use different data types and control structures
- Explore the use of Python functions
- Create programs to access files in Python

Instructions for the Paper-Setter
The question paper will consist of three sections A, B & C. Sections A & B will have four questions from the respective sections of the syllabus and will carry 30% marks each. Section C will have 6-12 short answer type questions which will cover the entire syllabus uniformly and will carry 40% marks in all.

Instructions for Candidates
Candidates are required to attempt five questions in all selecting two questions from each sections A and B and compulsory question of section C.

SECTION – A

Introduction to Python: History of Python, Strength and Weakness, Different Versions, Installing Python, Setting up in local environment, IDLE. Executing from file, command line from interactive mode, Python Identifiers and reserved key words.
Python syntax: Variables and Variables type, Data types. Data Types Conversion, Operators (Arithmetic, Comparison, Assignment. Bitwise, Logical, Membership, Identity), Operators Precedence, Python Decision making (if, el if, else, nested if), Python loops (while, for, nested loops), Break and continue statements.
Python Collections or Sequence: Sequence introduction, Number operations, String Operations, List, Tuple, Dictionary, Set.
Python Functions: Function introduction, User defined functions, Functions with parameters. Keywords and optional parameters. Scope of variables (Global and Local), Anonymous function Lambda, In-build function, List comprehension.

SECTION – B

Django framework: Creating a Django project, creating and deploy Django apps. Django project layout and MVC architecture: model, views and templates. redirecting URLs, handling get and post requests, creating and handling JSON file formats, user authentication using auth, working with sessions, working with AJAX, implementing API routing, deploying application.

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Database Queries: Understand basic Structured Query Language (SQL), introduction to compatible database models PostGreSQL, SQLite, MySQL. setting up database connectivity, working with Django ORM.

Text and Readings:

- Paul Gries. Jennifer Campbell, Jason Montojo. Practical Programming- An Introduction to Computer Science Using Python 3.6, Shroff Publications and Distributors
- John V Guttag, Introduction to Computation and Programming Using Python", Revised and expanded Edition. MIT Press. 2013
- Paul Gries, Jennifer Campbell and Jason Montojo, Practical Programming: An Introduction to Computer Science using Python 3, Second edition, Pragmatic Programmers, LLC, 2013.
- Rossum. Introduction To Python. Shroff Publications and Distributors
- Data Science Using Python, DPS Publications, New Delhi
- Mastering Django ,Nigel George, December 2016, Packt Publishing,ISBN: 9781787281141
- Learning Django Web Development,Sanjeev Jaiswal and Ratan Kumar,Packt Publishing Limited,ISBN: 9781783

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PDCA1203T: WEB TECHNOLOGY

Total Marks: 100
External Examination: 70
Internal Assessment: 30
Credits: 4

Maximum Time: 3 Hrs.
Minimum Pass Marks: 40%
Lectures to be delivered: 55-60 Hrs.
L: 4 T: 0 P: 0

Course Outcomes:

- Understand the basics of Java script for creation of web pages
- Create forms for interactive applications.
- Integrate Java and PHP database.
- Understand the design of applets.

Instructions for the Paper-Setter
The question paper will consist of three sections A, B & C. Sections A & B will have four questions from the respective sections of the syllabus and will carry 30% marks each. Section C will have 6-12 short answer type questions which will cover the entire syllabus uniformly and will carry 40% marks in all.

Instructions for the Candidates
Candidates are required to attempt five questions in all selecting two questions from each sections A and B and compulsory question of section C.

SECTION A

Internet Basics: Networks, Protocols, TCP/IP, Internet Addresses. Ports, Sockets, Name Resolution, Firewalls. Protocol Tunneling, Proxy Servers, Internet Standards, governing the web HTTP, MIME, Inside URLS, Web applications, Overview of clients/servers web communication, comparison of web servers, Common Gateway Interface CGI.
Web Page Designing: Introduction to markup languages;.HTML: list, table, images, frames, forms, pages style sheets CSS:XML: DTD, XML Namespaces, XML schemes, Presenting XML with CSS and XSLT, XML-DOM. What is XHTML?

SECTION B

Client Side Scripting: Java script: Introduction, documents, forms, statements, functions, objects; Event and event handling: Browsers and the DOM, JQuery: Syntax, Selectors, Events and AJAX methods.
Server Side Programming: PHP: Introduction, requirements, PHP syntax, data type, variables, strings. Operators, if-else, control structure, switch, array, function, file handling, form, sending email, file upload, session/state management, error and exception, PHP Database for dynamic Web pages.

Text and Readings:

- Jeffrey C Jackson. "Web Technology - A computer Science perspective", Persoson Education, 2007.

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- Chris Bates, "Web Programming - Building Internet Applications, "Wiley India, 2006.
- Xavier. C."Web Technology and Design", New Age International
- Ivan Bayross." HTML. DHTML. Java Script. Perl & CGI", BPB Publication.
- Ramesh Bangia. "Internet and Web Design", New Age International
- Bhave, "Programming with Java", Pearson Education

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PDCA1204P: PROGRAMMING LAB-III

Total Marks: 50
External Examination: 35
Internal Assessment: 15
Credits: 2

Maximum Time: 3 Hrs.
Minimum Pass Marks: 40%
Lectures to be delivered: 55-60 Hrs.
L: 0 T: 0 P: 4

This laboratory course will mainly comprise of exercise based on subject PDCA1202T (Web Development using Python and Django)

The breakup of marks for the practical will be as under:

i.	**Internal Assessment**	**30% Marks**
ii.	**Viva Voce (External Evaluation)**	**30% Marks**
iii.	**Project file, Project Execution (External Evaluation)**	**30% Marks**
iv.	**Attendance**	**10% Marks**

BOS: 29.01.2025

PDCA1205P: PROGRAMMING LAB-IV

Total Marks: 50
External Examination: 35
Internal Assessment: 15
Credits: 2

Maximum Time: 3 Hrs.
Minimum Pass Marks: 40%
Lectures to be delivered: 55-60 Hrs.
L: 0 T: 0 P: 4

This laboratory course will mainly comprise of exercise based on subject PDCA1203T (WEB TECHNOLOGY)

The breakup of marks for the practical will be as under:

i.	**Internal Assessment**	**30% Marks**
ii.	**Viva Voce (External Evaluation)**	**30% Marks**
iii.	**Project file, Project Execution (External Evaluation)**	**30% Marks**
iv.	**Attendance**	**10% Marks**

BOS: 29.07.2025

PDCA1206P: DATA ANALYSIS USING SPREADSHEET

Total Marks: 50
External Examination: 35
Internal Assessment: 15
Credits: 2

Maximum Time: 3 Hrs.
Minimum Pass Marks: 40%
Lectures to be delivered: 55-60 Hrs.
L: 0 T: 0 P: 4

Course Outcomes:

- Understand the basics of data analytics and its applications.
- Develop proficiency in using spreadsheet software for data manipulation and analysis.
- Build and use spreadsheets models for decision making and communicate data sights effectively.
- Understand the fundamentals of data visualization and its importance.
- Study different types of visualizations and their appropriate uses.

SECTION – A

Introduction to Spreadsheet: Overview of Spreadsheet, setting up the workspace and preferences, basic data entry and formatting.

Basic Functions and Formulas:

Understanding formulas and functions, basic arithmetic functions (SUM, AVERAGE, MIN, MAX), text functions (CONCATENATE, LEFT, RIGHT, MID), logical functions (IF, AND, OR, NOT).

Data Cleaning and Preparation:

Importing data from various sources, data cleaning techniques: removing duplicates, handling missing values, data validation, text functions for data cleaning.

Data Manipulation and Transformation:

Sorting and filtering data, using tables and structured references, using lookup functions (VLOOKUP, HLOOKUP, INDEX-MATCH), working with PivotTables for data summarization.

SECTION – B

Basic Data Analysis Techniques:

Descriptive statistics in Excel: mean, median, mode, standard deviation, and variance, frequency distributions, using Excel's Data Analysis Tool pack.

Introduction to Data Visualization:

Principles of data visualization, creating basic charts in Excel: bar charts, line charts, pie charts, customizing charts for better clarity.

Advanced Data Visualization Techniques:

Creating advanced charts: scatter plots, histograms, box plots, introduction to Pivot Charts, using spark lines for data trends.

Advanced Excel Functions: SUMIFS, COUNTIFS, AVERAGEIFS, array formulas, performing scenario analysis and what-if analysis, using Solver for optimization problems.

The breakup of marks for the practical will be as under:

i.	**Internal Assessment**	**30% Marks**
ii.	**Viva Voce (External Evaluation)**	**30% Marks**
iii.	**Project file, Project Execution (External Evaluation)**	**30% Marks**
iv.	**Attendance**	**10% Marks**

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PDCA1207T: DIGITAL MARKETING

Total Marks: 50
External Examination: 35
Internal Assessment: 15
Credits: 2

Maximum Time: 1.5 Hrs.
Minimum Pass Marks: 40%
Lectures to be delivered: 25-30 Hrs.
L: 2 T:0 P: 0

Course Outcomes:

- Understand the concepts of Digital Inclusion and Empowerment and analyze the role of initiatives like DigiLocker, BHIM, e-Kranti, and e-Hospitals in promoting a digitally empowered society.
- Explore and evaluate the use of public utility portals (e.g., RTI, Health, Finance, Education, and Income Tax filing) provided by the Government of India for citizen services.
- Demonstrate the ability to use various digital communication tools and platforms, including blogs, social media, and collaborative tools for file sharing, messaging, and video conferencing.
- Analyze the threat landscape in cyberspace, including data breaches, cyber-attacks, and understand security practices such as Blockchain and government security initiatives.
- Explain and apply ethical practices and netiquettes in digital environments, and understand the importance of ethics in digital communication and cyberspace behavior.

Instructions for the Paper-Setter
The question paper will consist of three sections A, B & C. Sections A & B will have four questions from the respective sections of the syllabus and will carry 30% marks each. Section C will have 6-12 short answer type questions which will cover the entire syllabus uniformly and will carry 40% marks in all.

Instructions for Candidates
Candidates are required to attempt five questions in all selecting two questions from each sections A and B and compulsory question of section C.

SECTION – A

Meaning and Definition of Marketing- Basics of Marketing, Features of Marketing, Importance of Marketing, Functions of Marketing, Core Concept of Marketing - Need, Want, Demand, Value and Satisfaction, Production-Concept, Product concept, selling concept Marketing concept, Marketing Mix: Meaning, Seven Ps of marketing mix.
Introduction to Digital Marketing- Key Concepts of Digital Marketing, Traditional Marketing vs. Digital Marketing, The Opportunity of Digital Marketing, Characteristics of Digital Marketing, Implications of Digital Marketing, Strategies in Digital Marketing.
Internet and WWW: Introduction to internet and its working, business use of internet, services offered by Internet, evaluation of internet, internet service provider (ISP), internet addressing (DNS and IP addresses). Introduction and working of WWW, Web browsing (opening, viewing, saving and printing a web page and bookmark).
Search Engine: About search engine, component of search engine, working of search engine,

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SECTION – B

HTML: Basics of HTML, HTML Tags, Elements of Web page (Text , Image & Hyperlink Elements).
SMO (Social Media Optimization) –Facebook, Twitter, YouTube-Introduction to Social Media, Types of Social Media, How Social Media is affecting Google Search, How to choose right social media, Integrating social media into your website and blogs, Facebook Marketing, Introduction to Facebook, Difference between Profiles, Places, Groups and Pages, Social media and communications strategy, Facebook Connect(Like, Share, Comment),Facebook pages(Creating, Managing, Retention), Facebook Apps, Measuring and Monitoring, Advantages and Challenges ,
Twitter Marketing: Introduction to Micro blogging and Twitter, Twitter Demographics, Use for reputation, promotion, sales, conversing, Who to follow, Tweeting, Searching tweets and users, Measuring Influence, Tools, Tracking Code, Twitter Account Promotion, How to Shorten and Measure your URLs , Photo Sharing Social Network : Picasa, Video Sharing Social Network : YouTube
Email Marketing: Introduction to Email Marketing, How Email Marketing Works, Sending

Text and Readings:

- William I. Stanton, Ajay Pandit-Marketing Concepts & Cases,- The McGraw Hill companies Ltd. New Delhi
- Search Engine Optimization Bible, Jerri L. Ledford, Wiley Publishing
- S.A.Sherlekar, "Marketing Management", Himalaya Publishing House, Mumbai.
- E. Stephen Mack, Janan Platt, "HTML 4.0" BPB Publications, New Delhi

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