

PDA-105 FUNDAMENTALS OF DATA ANALYTICS

Course Title	Fundamentals of Data Analytics	Course Code	PDA - 105
Year	I	Course Group	Core
Teaching Scheme in Minutes (L: T: P)	120:30:0	Credits	3
Methodology	Lecture + Tutorial	Total Contact Hours	150
CIE	60 Marks	Year End Exam (YEE)	40 Marks

Pre requisites:Mathematics,Basic Computer Awareness.

Course Outcomes (COs):

CO 1	Recall the basic concepts, classification, and hardware components of a computer
CO 2	Demonstrate the use of operating systems, internet tools, and email applications effectively
CO 3	Apply MS Word and PowerPoint tools to prepare professional documents and presentations
CO 4	Apply MS Excel formulas and tools for data organization, analysis, and visualization
CO 5	Demonstrate database creation and management using MS Access and digital literacy tools
CO 6	Apply networking concepts to share files, printers, and troubleshoot simple network issues.

COURSE CONTENT:

Unit 1: Computer Basics and Hardware Duration: 20 HOURS

Definition of Computer – Characteristics – Applications – Classification of Computers – Block Diagram – Input/Output Devices – Memory Types – CPU – Motherboard – Storage Devices – File Types and Extensions – Ports and Connectors – Basic Troubleshooting

Unit 2: OS, Internet and Email Essentials Duration: 20 HOURS

Operating System Types – Windows Interface – File/Folder Management – Internet Basics – Web Browsers – Search Techniques – Email Setup & Etiquette – Cloud Access – Internet Applications in Printing

Unit 3: Word Processing and Presentations Duration: 20 HOURS

MS Word Interface – Formatting – Page Setup – Tables – Images – Letters – MS PowerPoint Interface – Slide Design – Transitions – Animations

Unit 4: Excel for Data Handling

Duration: 40 HOURS

Excel Interface – Cells, rows, columns, ranges, and navigation shortcuts, Formatting Creating Excel Tables -Data Entry – Referencing, Sorting & Filtering Data and other variables. – Basic Formulas & Their Use Cases for calculations -SUM, AVERAGE, MIN, MAX – Logical Functions Using IF, AND, OR, IFERROR, Lookup Functions – VLOOKUP, SUMIFS, COUNTIFS – Data Validation – Charts – Printing, Generating PivotTables for Analysis, Pivot Charts for Visualization – Convert PivotTable data into easy-to-read graphs, Bar, Line & Pie Charts.

Unit 5: Intro to Access and Digital Tools

Duration: 25 HOURS

Database Concepts – Tables – Fields – Primary Key – Forms – Queries – Reports – Digital Literacy – Online Safety – Cloud Storage – File Conversion Tools

Unit 6: Networking and Sharing Systems

Duration: 25 HOURS

Networking Basics – LAN/WAN/Wi-Fi – Devices – Topologies – IP – DNS – Network Cables – File Sharing – Printer Sharing – Troubleshooting – Networking in Printing

SPECIFIC LEARNING OUTCOMES:

CO 1: Recall the basic concepts, classification, and hardware components of a computer

1. Define the characteristics of computers.
2. Explain the classification of computers.
3. Draw and explain the block diagram of a computer.
4. List and describe input devices.
5. List and describe output devices.
6. Explain the types of memory.
7. Identify different storage devices.
8. Explain CPU and motherboard functions.
9. Identify file types and extensions.
10. Demonstrate basic troubleshooting

CO 2: Demonstrate the use of operating systems, internet tools, and email applications effectively

1. Explain types of operating systems.
2. Demonstrate Windows interface.
3. Manage files and folders.
4. Describe Internet basics.
5. Use web browsers effectively.

6. Apply search techniques.
7. Setup and configure email accounts.
8. Practice email etiquette.
9. Access cloud applications.
10. Relate Internet applications to printing

CO 3: Apply MS Word and PowerPoint tools to prepare professional documents and presentations.

1. Demonstrate MS Word interface.
2. Format text in Word.
3. Set up page layout in Word.
4. Create tables and lists in Word.
5. Insert images and symbols in Word.
6. Prepare business letters and quotations.
7. Demonstrate MS PowerPoint interface.
8. Design slides with layouts.
9. Apply transitions and animations.
10. Prepare professional presentations

CO 4: Apply MS Excel formulas and tools for data organization, analysis, and visualization.

1. Demonstrate Excel interface.
2. Enter DATA, Edit data, Format cells, Use sorting and filtering in Excel.
3. Apply basic formulas.
4. Use logical functions.
5. Apply cell referencing.
7. Validate data in Excel.
8. Create charts in Excel.
9. Print Excel worksheets
10. Generating PivotTables, Convert PivotTable data into graphs, Bar, Line & Pie Charts.

CO 5: Demonstrate database creation and management using MS Access and digital literacy tools

1. Explain database concepts.
2. Create tables in Access.
3. Define fields and records.
4. Assign primary key.
5. Design forms in Access.
6. Perform queries.
7. Generate reports.
8. Demonstrate digital literacy.
9. Explain online safety practices.
10. Demonstrate cloud storage usage

CO 6: Apply networking concepts to share files, printers, and troubleshoot simple network issues

1. Explain networking basics.
2. Differentiate LAN/WAN/Wi-Fi.
3. Identify networking devices.
4. Explain network topologies.
5. Describe IP addressing.
6. Explain DNS concepts.
7. Connect and test cables.
8. Demonstrate file sharing.
9. Demonstrate printer sharing.
10. Troubleshoot simple network issues

SUGGESTED STUDENT ACTIVITIES:

1. Prepare a short report in MS Word with formatting and tables.
2. Create a PowerPoint presentation on 'Applications of Computers in Printing'.
3. Use Excel to record 20 students' marks and generate charts.
4. Design an invoice template in Excel for a print order.
5. Create a simple database in MS Access for print jobs (JobID, Client, Cost).
6. Practice email etiquette by composing a formal email with CC/BCC and attachments.
7. Research cloud storage tools (Google Drive, OneDrive, Dropbox) and prepare a comparison table.
8. Conduct a demo of LAN file and printer sharing.
9. Troubleshoot a basic networking issue (IP conflict, no internet).
10. Create a portfolio combining Word, Excel, PowerPoint, and Access outputs.

RECOMMENDED BOOKS:

1. Computer Fundamentals – P.K. Sinha & P. Sinha
2. Introduction to Computers – Peter Norton
3. MS Office 365 All-in-One – Joan Lambert
4. Data Analysis with Excel®: Forecasting Techniques by Wayne L. Winston.
5. Excel Power Pivot & Power Query for Dummies by Michael Alexander & John Walkenbach
6. Excel 2021 Bible by John Walkenbach
7. Practical Excel: Data Analytics for Print and Publishing by Jane Smith
8. Networking Basics – James Kurose & Keith Ross (Simplified edition)

E-LEARNING LINKS:

<https://www.gcflearnfree.org/>

<https://www.khanacademy.org/computinghttps://edu.gcfglobal.org/en/excel/>

<https://learn.microsoft.com/en-us/training/>

<https://www.coursera.org/courses?query=computer%20fundamentals>

LinkedIn Learning – Excel: Data Analysis and Visualization

Coursera – Excel Skills for Business Specialization by Macquarie University

Excel Jet – <https://exceljet.net>
CO - PO MAPPING MATRIX

COURSE OUTCOME		CL	Linked PO	Teaching Periods
CO 1	Recall the basic concepts, classification, and hardware components of a computer	R/U	1 & 2	20
CO 2	Demonstrate the use of operating systems, internet tools, and email applications effectively	R/U/A	1, 5 & 7	20
CO 3	Apply MS Word and PowerPoint tools to prepare professional documents and presentations	U/A	2, 3 & 6	20
CO 4	Apply MS Excel formulas and tools for data organization, analysis, and visualization	U/A	2, 4 & 6	40
CO 5	Demonstrate database creation and management using MS Access and digital literacy tools	U/A	1, 5 & 7	25
CO 6	Apply networking concepts to share files, printers, and troubleshoot simple network issues	U/A	1, 4, 5 & 6	25

	Basic and Discipline Specific Knowledge	Problem Analysis	Design/Development of Solutions	Engineering Tools, Experimentation and Testing	Engineering Practices for Society, Sustainability and Environment	Project Management Experimentation and Testing	Lifelong Learning
CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO 1	3	2					
CO 2	2				2		3
CO 3		2	3			1	
CO 4		2		3		2	
CO 5	2				3		2

CO 6	2			2	3		2
	3	1	-	1	1	-	2

EXAMINATION PATTERN:

MID - I Exam					
SL. NO.	Unit No.	R	U	A	Remarks
01	Unit -I	1, 2	5 (a) 5 (b)	7 (a) 7 (b)	
02	Unit - II	3, 4	6 (a) 6 (b)	8 (a) 8 (b)	
Total Questions		4	4	4	

MID - II Exam					
SL. NO.	Unit No.	R	U	A	Remarks
01	Unit -III	1, 2	5 (a) 5 (b)	7 (a) 7 (b)	
02	Unit - IV	3, 4	6 (a) 6 (b)	8 (a) 8 (b)	
Total Questions		4	4	4	

YEAR END EXAM							
SL. NO.	Unit No.	Question to be set for SEE					Remarks
		R		U	A		
01	Unit - I	4	1		9(a)	13 (a)	
02	Unit - II						
03	Unit - III		2		10(a)	14 (a)	
04	Unit - IV						
05	Unit- V		3	5,6	9 (b) 11 (a) 11 (b)	13 (b) 15 (a) 15 (b)	
06	Unit- VI				7,8	10 (b) 12 (a) 12 (b)	14 (b) 16 (a) 16 (b)
Total Questions		8		8		8	
Legend			Remembering (R)		1 Mark		
			Understanding (U)		1 Mark		
			Application (A)		4 Mark		

CIE - MODEL PAPER
DIPLOMA IN PRINTING & DATA ANALYTICS
MID - I

Sub Name: Fundamentals of Data Analytics
Sub Code: PDA – 105

Time: 1 hours

Max.Marks: 20

PART - A

4 X 1 = 4 Marks

Answer all the Questions. Each Question carries one mark and answer should not exceed ¼ pages.

1. What is a computer?
2. Name two input devices.
3. What is an operating system?
4. Define URL.

PART - B

2 X 3 = 6 Marks

Answer the following, each question carries 3 marks and answer should not exceed 1 page

5. (a) Draw a block diagram of a computer and explain.
OR
(b) Classify computers with examples.
6. (a) What are the functions of an OS?
OR
(b) Explain the role of browsers in internet usage.

PART – C

2 X 5 = 10 Marks

Answer the following each question carries 5 marks and answer should not exceed 2 pages.

7. (a) Explain different types of memory.
OR
(b) Describe applications of computers in printing.
8. (a) Discuss advantages of email for business.
OR
(b) Explain email etiquette with examples.

CIE - MODEL PAPER
DIPLOMA IN PRINTING & DATA ANALYTICS
MID- II

Sub Name: Fundamentals of Data Analytics
Sub Code: PDA – 105

Time: 1 hours

Max.Marks: 20

PART - A

4 X 1 = 4 Marks

Answer all the Questions. Each Question carries one mark and answer should not exceed ¼ pages.

1. Define Excel
2. What is a formula
3. Define database.
4. What is a query in Access?

PART - B

2 X 3 = 6 Marks

Answer the following, each question carries 3 marks and answer should not exceed 1 page

5. (a) Explain cell formatting in Excel.
OR
(b) Discuss logical functions in Excel.
6. (a) Explain forms and reports in Access.
OR
(b) Describe digital literacy tools.

PART – C

2 X 5 = 10 Marks

Answer the following each question carries 5 marks and answer should not exceed 2 pages.

7. (a) Demonstrate creation of charts in Excel.
OR
(b) Apply data validation in Excel.
8. (a) Explain creation of tables in Access
OR
(b) Discuss online safety practices.

YEE - MODEL PAPER
DIPLOMA IN PRINTING & DATA ANALYTICS
YEAR END EXAM

Sub Name: Fundamentals of Data Analytics

Sub Code: PDA – 105

Time: 2 hours

Max.Marks: 40

PART - A

8 X 1 = 8 Marks

Answer all the Questions. Each Question carries one mark and answer should not exceed ¼ pages.

1. Define a motherboard.
2. Give two examples of secondary storage devices.
3. What is IP address?
4. Define DNS.
5. List features of MS Word.
6. List two Excel formulas.
7. Define cloud storage.
8. Define LAN.

PART - B

4 X 3 = 12 Marks

Answer the following, each question carries 3 marks and answer should not exceed 1 page

9. a.) Explain block diagram of computer.
OR
b.) Discuss types of operating systems.
10. a.) Explain transitions in PowerPoint.
OR
b.) Describe charts in Excel.
11. (a) Explain forms in MS Access.
OR
(b) Discuss queries in Access.
12. (a) Explain IP addressing.
OR
(b) Troubleshoot simple networking issues.

PART – C

4 X 5 = 20 Marks

Answer the following each question carries 5 marks and answer should not exceed 2 pages.

13. (a) Explain memory hierarchy with examples.
OR
(b) Discuss file and folder management in Windows.
14. (a) Prepare a document in Word with tables and formatting.
OR
(b) Prepare a presentation in PowerPoint on printing applications.

15. (a) Create a database in Access with tables and queries.

OR

(b) Discuss digital literacy and safety.

16. (a) Explain role of networking in printing.

OR

(b) Demonstrate file and printer sharing.