



**CA**  
**PAKISTAN**

## **SYLLABUS:**

- **HANDS-ON COURSE ON DATA MANAGEMENT & ANALYTICS**
- **HANDS-ON COURSE ON FIN-TECH**

## Hands-on Course on Data Management and Analytics

Competency
Apply enhanced skillset of data management, analysis and business intelligence to respond to the needs of emerging workplace.

Grid Ref	Grid	Minimum Coaching hours	Weightage
A	Data and Database Management System	16	15-20
B	Big Data, Data & Business Analytics	18	-20-25
C	Data Description and Diagnostics	20	20-25
D	Data Visualization & Classification	16	15-20
E	Data Prediction and modeling	20	20-25
	<b>Total</b>	<b>90</b>	<b>100</b>

Syllabus Ref	Contents	Proficiency Level
<b>A</b>	<b>Data and Database Management systems</b>	
1	Discuss popular database management systems and Structured Query Language (SQL).	P2
2	Use SQL commands to perform extract and analyze data.	P2
3	Discuss core features and main components of ERP systems and how data can be extracted from an ERP using SQL.	P1
4	Discuss fundamentals of big data cloud services, e.g., google cloud (big-query), AWS, and Azure.	P1
5	Discuss No-SQL, object databases, graph database, and unstructured documents (pdf, docx) search (Multiple data sources).	P1
<b>B</b>	<b>Big Data, Data &amp; Business Analytics</b>	
1	Discuss Big Data modeling on cloud infrastructure.	P1
2	Prepare for collection, storage, and organization of data using Big Data solutions for business organizations.	P1
3	Apply statistics tools for Predictive modeling using Regression, Clustering and Classification analysis.	P2

<b>Syllabus Ref</b>	<b>Contents</b>	<b>Proficiency Level</b>
4	Apply time series data analysis and forecasting.	P2
<b>C</b>	<b>Data Description and Diagnostics</b>	
1	Introduction to Python and its libraries.	P1
2	Use Python descriptive and statistical analysis of financial, accounting other business data.	P2
3	Discuss use of Python in audit, assurance and related services context for evaluating internal controls, gathering evidence and drawing conclusions.	P1
<b>D</b>	<b>Data visualization and classification</b>	
1	Perform Data Extraction, Transformation and Loading (ETL) using Python and Power Query.	P2
2	Develop Data insights using Python.	P2
3	Perform data visualization techniques using Python and Power BI.	P2
<b>E</b>	<b>Data prediction and modeling</b>	
1	Use machine learning model for predictive data analysis and data driven decision making.	P2
2	Apply supervised and unsupervised machine learning techniques on business problems.	P2
3	Apply AutoML, and cloud services to train models with minimal code or no code, e.g., hugging face autoML, vertexAI, etc.	P2
4	Apply model deployment and inference pipeline.	P2

### **Key Examinable Professional Skills**

1	Evaluate data and information from a variety of sources and perspectives through research, integration, and analysis.
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### **Key Examinable Professional Values, Ethics and Attitude**

1	Apply an inquiring mind when collecting and assessing data and information
2	Apply critical thinking when identifying and evaluating alternatives to determine an appropriate course of action.
3	Apply fundamental principles of ethics when collecting, generating, storing, accessing, using, or sharing data and information.

4	Ability to work with sensitive information in an ethical and secure manner.
5	Ability to adapt to changes in technology.
6	Willingness to continuously learn and improve skills.

### Specific Examinable Knowledge Reference

1	Conceptual schema, relational database design, normalization
2	SQL for data extraction and analysis
3	Core features and components of ERP systems and data extraction from ERP using SQL
4	Big Data Infrastructure Plan and Information System Design
5	Strategies for handling and processing Big Data
6	Open-source frameworks for Big Data
7	Collection, storage, and organization of data using Big Data solutions for business organizations
8	Data integrity and control processes in business and finance
9	Gartner's Model (Descriptive, diagnostics, predictive and prescriptive analytics)
10	Predictive modeling using regression, clustering, and classification analysis
11	Python and its libraries
12	Python for descriptive and statistical analysis of business data (mean or average, median, quartile, maximum, minimum, range, variance, and standard deviation)
13	Create plots, graphs, tables using python and its libraries
14	Hierarchical Clustering, Nonhierarchical Clustering
15	Cluster and Association
16	Correlation, Hypothesis Testing
17	Python in audit, assurance, and related services for evaluating internal controls and gathering evidence
18	Data Extract, Transform, and Load (ETL) using Python and Power Query
19	Development of data insights using Python
20	Data visualization techniques using Python and Power BI
21	Machine learning models for predictive data analysis
22	Implications of AI and robotics in data prediction and validation
23	Use of smart software and applications for data prediction and results validation

24	Application of supervised and unsupervised machine learning techniques on business analytics.
25	Data Analytics Cases on:
	<ul style="list-style-type: none"><li>• Consumer Demand, Pricing and Revenues</li></ul>
	<ul style="list-style-type: none"><li>• Customer Value, Segmentation and Share of Wallet</li></ul>
	<ul style="list-style-type: none"><li>• Product Profitability and Channel Optimisation</li></ul>
	<ul style="list-style-type: none"><li>• Supply Chain Optimisation</li></ul>
	<ul style="list-style-type: none"><li>• Predictive Maintenance</li></ul>
	<ul style="list-style-type: none"><li>• Operational Efficiency</li></ul>
	<ul style="list-style-type: none"><li>• Fraud and Risk Assessment</li></ul>
	<ul style="list-style-type: none"><li>• Business Portfolio Assessment</li></ul>
	<ul style="list-style-type: none"><li>• Business Valuation Metrics</li></ul>

## HANDS-ON COURSE ON FIN-TECH

<b>Competency</b>
Apply enhanced skillset to manage and foresee impact of technology on financial decision making to respond to the needs of the emerging workplace.

<b>Grid</b>	<b>Minimum Coaching hours</b>	<b>Weightage</b>
Business Technology	8	5-10
Digital Transactions, Funding and Investments	26	25-30
Financial Trends & Analytics	44	45-50
Security, Risk and Regulations	12	10-15
<b>Total</b>	<b>90</b>	<b>100</b>

<b>Syllabus Ref.</b>	<b>Contents</b>	<b>Proficiency Level</b>
<b>A</b>	<b>Business Technology</b>	
1	Discuss Fintech Overview including: AI, Blockchain, Cloud, IoT, Data, Cybersecurity.	P1
2	Discuss FinTech infrastructure including the impact of the changing technologies within finance and Banking.	P1
3	Discuss and identify market size and major players in the market, including startups, Banks, consumers and governments.	P1
<b>B</b>	<b>Digital Transactions, Funding and Investments</b>	
1	Develop understanding of the digital payments and remittances.	P2
2	Discuss payment operations Processes, Procedures and Policies including settlement and reconciliation processes.	P1
3	Identify elements of block chain, cryptocurrencies, crowdfunding and other alternative finance technologies (design, uses and limitations). Understand initial coin offering.	P1
4	Discuss introduction to Decentralized Finance (DeFi), how it is different from Centralized Finance. Discuss lending and other financial operations using digital technologies.	P1
5	Discuss data-driven finance using existing case studies.	P1

Syllabus Ref.	Contents	Proficiency Level
6	Discuss Global and Pakistan's FinTech landscape with the case studies.	P1
<b>C</b>	<b>Financial Trends and Analytics</b>	
1	Perform coding using Python.	P2
2	Use Python to analyze data trends for payments, credit lending, crowdfunding and other retail and business decisions.	P2
3	Use Python/R for basic descriptive, diagnostic and predictive analytics on financial data.	P2
<b>D</b>	<b>Security, Risk and Regulations</b>	
1	Discuss regulation and ecosystems for FinTech regulations. Understand key challenges relating Digital Financial Services in Pakistan.	P1
2	Discuss overview of Risk Management Process and security standards. Discuss cyber security framework and risk mitigation solutions for business organizations.	P1
3	Discuss threats and vulnerabilities regarding privacy and digital identities. Understand process of penetration testing and vulnerability assessment.	P1
4	Discuss the importance of disaster recovery and business continuity in relation to FinTech solutions.	P1

### Key Examinable Professional Skills

1	Evaluate data and information from a variety of sources and perspectives through research, integration, and analysis.
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### Key Examinable Professional Values, Ethics and Attitude

1	Apply an inquiring mind when collecting and assessing data and information
2	Apply critical thinking when identifying and evaluating alternatives to determine an appropriate course of action.
3	Apply fundamental principles of ethics when collecting, generating, storing, accessing, using, or sharing data and information.
4	Ability to work with sensitive information in an ethical and secure manner.
5	Ability to adapt to changes in technology.

6	Willingness to continuously learn and improve skills.
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**Key Examinable Knowledge Reference**

1	Banking and payments industry
2	FinTech technologies including AI, Blockchain, Cloud, IoT, Data, and Cybersecurity
3	Impact of changing technologies on finance and banking
4	Digital payments and remittances, settlement and reconciliation processes
5	Blockchain ecosystems
6	Cryptocurrencies, crowdfunding, initial coin offerings, and decentralized finance
7	Python for descriptive, diagnostic, and predictive analytics
8	Regulatory environment and challenges for FinTech in Pakistan
9	Risk management and security standards, cyber security framework and mitigation solutions
10	Cybersecurity models (the CIA triad, the star model, the Parkerian hexad)
11	The information security lifecycle
12	The Risk Management Framework (RMF)
13	Threats and vulnerabilities regarding privacy and digital identities, penetration testing and vulnerability assessment
14	Disaster recovery and business continuity in relation to FinTech solutions.
15	Contingency Planning
16	FinTech Regulations (National Financial Inclusion Strategy, Government of Pakistan)
17	Regulatory Technology