

Appendix-B

Scheme of Teaching and Examinations for Semester & Credits Pattern of Graduate Diploma in Business Analytics Semester I toII

TABLE-I

Sr. No	Subject	Subject Code	TeachingScheme			ExaminationScheme					
						Theory/Practical			Internal		Total Marks
			Theory Credits	PracticalCr redits	Total Credits	Dur.	Max Mar.	Min. Mar.	Max. Mar.	Min. Mar.	
1.	Introduction And Mathematic for Business Analytics	DIBA- 1	04		04	14 Hr	80	40	20	08	100
2.	Basics of Accounting	DIBA- 2	04		04	14 Hr	80	40	20	08	100
3.	Business Economics	DIBA- 3	04		04	14 Hr	80	40	20	08	100
4.	Data Visualization And database management	DIBA- 4	04		04	14Hr	80	40	20	08	100
5	Programming Fundamentals	DIBA- 5	04		04	14 Hr		40	20	08	100
6	Internship	DYW- 6		04	04	14 Hr	80	40	20	08	100
	Total		20	04	24	120	400	240	100	40	500

Appendix-B**Scheme of Teaching and Examinations for Semester & Credits Pattern of Graduate Diploma in Business Analytics Semester I toII****TABLE-II**

Sr. No	Subject	Subject Code	TeachingScheme			ExaminationScheme					
						Theory/Practical			Internal		Total Marks
			Theory Credits	Practical Credits	Total Credits	Dur.	Max Mar.	Min. Mar.	Max. Mar.	Min. Mar.	
1.	Introduction to E-Business	DIBA 11	04		04	14 Hr	80	40	20	08	100
2.	Analytics in Various Field and Data Privacy	DIBA 22	04		04	14 Hr	80	40	20	08	100
3.	Machine learning & Advanced Analytics	DIBA 33	04		04	14 Hr	80	40	20	08	100
4.	Business Analytics & Statistical Methods using R	DIBA 44	04		04	14Hr	80	40	20	08	100
5	Big Data Analytics	DIBA 55	04		04	14 Hr	80	40	20	08	100
6	Internship	DYW66		04	04	14 Hr	80	40	20	08	100
	Total		20	04	24	84 Hr	480	240	120	48	600

SYLLABUS OF BUSINESS ANALYTICS

Semester 1

Subject 1

Introduction and Mathematics for Business Analytics

Unit 1

Data Analysis, Statistical Methods and Predictive modelling to make data-driven decision, Business analytics Fundamentals Role.

Unit 2

Data Sources and Collection Methods, Role of Data in decision making, Data processing And Data Cleaning, Data Cleaning and Transformation, Handling Missing data

Unit 3

Descriptive Statistics, Probability and Distribution, Advance Descriptive statistics, concept of Regression analysis

Unit 4

Mathematics for Business Analytics: Five Main Types of Statistics/Analytics, Two Areas in Exploratory Statistics, Measures of Central Tendency: Mode, Median, IQR, Arithmetic Mean (AM), Geometric Mean (GM), Harmonic Mean

Reference Book :

Subject 2

Basic of Accounting

Unit 1:

Introduction to Accounting

Definition and Role of Accounting, Accounting Principles and Concepts, Accounting Equation, Types of Business Entities, Accounting Cycle, Double-Entry Accounting, Chart of Accounts, Ethical Issues in Accounting

Unit 2:

Recording Transactions

Debits and Credits, Journal Entries, General Ledger, Trial Balance, Adjusting Entries, Accrual Accounting, Prepaid and Unearned Revenue, Closing Entries

Unit 3:

Financial Statements

Income Statement, Statement of Retained Earnings, Balance Sheet, Statement of Cash Flows, Financial Statement Analysis, Accounting Ratios, Cash vs. Accrual Accounting, Interpreting Financial Statements

Unit 4:

Accounting for Assets and Liabilities

Accounts Receivable and Bad Debt, Inventory Valuation, Property, Plant, and Equipment, Intangible Assets, Current and Non-current Liabilities, Bonds and Long-Term Debt, Leases and Contingent Liabilities, Accounting for Income Taxes

Unit 5:

Control and Evaluation

Cost Accounting, Budgeting and Forecasting, Accounting for Non-Profit Organizations, International Accounting Standards, Ethics in Accounting and Reporting, Audit and Assurance Services, Fraud Examination, Recent Developments in Accounting

Subject 3

Business Economics

Unit 1:

Introduction to Economics

Definition and Scope of Economics, Microeconomics vs. Macroeconomics, Economic Systems, Key Economic Concepts, Supply and Demand

Unit 2:

Microeconomic Analysis

Consumer Behavior and Utility, Elasticity of Demand and Supply, Production and Cost Analysis, Market Structures, Pricing and Output Decisions

Unit 3:

Macroeconomic Analysis

National Income and GDP, Unemployment and Inflation, Aggregate Demand and Supply, Fiscal Policy and Government Spending, Monetary Policy and the Central Bank.

Unit 4:

International Economics

Trade and Comparative Advantage, Exchange Rates and Currency Markets, Balance of Payments, Globalization and Trade Policy, Economic Integration

Unit 5:

Applied Business Economics

Business Cycles and Economic Forecasting, Economic Decision-Making in Business, Economic Factors in Strategic Planning, Ethical and Social Responsibility in Economics, Emerging Economic Trends and Challenges

Subject 4

Data Visualization and Database Management

Unit 1

Data Visualization

Introduction to Data Visualization: Role of Data Visualization in data analysis and communication, Types of Data Visualization (e.g. charts, graphs, maps), Data Visualization tools and software, Features and Capabilities of Selected Tools

Unit 2

Data Visualization Principles – Design principles for effective data visualization, color Theory and usage in data visualization , Human perception and cognition in visualization design , Tools and Techniques

Unit 3

Introduction to data visualization tools (e.g. tableau, Python libraries), Creating basic charts and graphs , Interactive and Dynamic visualization

Unit 4

Introduction to Database management, Advantages and Disadvantages of Database Management, need of database Management, Relational Database, SQL Queries, Data modelling

Reference Books:

Data Visualization : A successful Design Process by Andy Kirk

Subject 5

Programming Fundamentals

Unit 1:

Introduction to Programming

What is Programming, Python: A High-Level Overview, Setting Up the Development Environment, Writing and Running Python Programs, Basic Syntax and Variables

Unit 2:

Control Structures and Functions

Conditional Statements, Loops and Iteration, Functions and Modules, Exception Handling, Debugging and Testing, Data Visualization with Matplotlib

Unit 3:

Data Structures

Lists and Tuples, Dictionaries and Sets, Strings and String Manipulation, File Input and Output, Lists and Dictionary Comprehensions

Unit 4:

Object-Oriented Programming

Classes and Objects, Inheritance and Polymorphism, Encapsulation and Abstraction, Advanced OOP Concepts, Working with Modules and Libraries

SEMESTER 2

Subject 1

Introduction to E-Business

Unit 1

E-Business

What is E-Business?, History and Evolution of E-Business, E-Business Models, E-Business vs. Traditional Business, E-Business Opportunities and Challenges

Unit 2:

E-Business Infrastructure

Internet and Web Technologies, E-Commerce Platforms and Payment Systems, Web Hosting and Domain Registration, Security in E-Business, Mobile and Cloud Technologies in E-Business

Unit 3:

E-Commerce and Online Retailing

E-Commerce and Online Shopping, Business-to-Consumer (B2C) E-Commerce, E-Commerce Website Development, Customer Experience and User Interface, Online Payment Methods

Unit 4:

E-Business Strategies and Marketing

E-Business Strategy Development, Digital Marketing and SEO, Social Media in E-Business, Email Marketing and Online Advertising, Content Management and E-Business Promotion. E-Business Laws and Regulations.

Subject 2

Analytics in Various Field And Data Privacy

Unit 1

Introduction to marketing Analytics ,What is Marketing Management, Marketing Technology Overview ,What is Marketing Analytics, Marketing Analytics popular frameworks, Skills required for Marketing Analytics, Marketing Automation with Analytics Tools, Importance of data availability and governance .

Unit 2

Introduction to Financial Analytics: What is financial management, Financial Technology Overview, What is Financial Analytics, Financial Analytics popular frameworks, Skills required for Financial Analytics, Financial Automation with Analytics Tools, Importance of data availability and governance.

Unit 3

Introduction to Human Resource Technology and Analytics: What is human resource management, HR Technology Overview, What is HR Analytics, HR Analytics popular frameworks, Skills required for HR Analytics, HR Automation with Analytics Tools, Importance of data availability and governance.

Unit 4

Data Privacy

Data Privacy, Distinction in data Privacy and data security, types of Data privacy, Importance of data privacy, Challenges in data privacy, step to protect the data Privacy, Case Studies.

Subject 3

Machine learning & Advanced Analytics

Unit 1

Machine Learning and Cognitive Intelligence:

Introduction to Machine Learning- History and Evolution, Machine Learning categories: Supervised, Unsupervised and Reinforcement learning. Framework for building ML Systems- KDD process model, CRISP-DM & SEMMA, Machine learning Python packages, Machine Learning Core Libraries. Introduction to Cognitive Intelligence, Features of Cognitive Intelligence

Unit 2

Time Series Analysis:

Time series data and analysis, forecasting techniques and methods Application in business and finance, time series modelling with R and Python, Identifying patterns and trends, Storytelling with data.

Unit 3

Text Analytics:

Text Processing, Define text analysis and its applications in data analytics Explore the challenges and opportunities of working with unstructured text data, introduce the concept of text processing, importance of text processing in preparing text data for analysis.

Unit 4

Introduction to web analytics

Overview of web analytics and its role in business, introduction to web Analytics tools (e.g. Google Analytics) Key metrics and KPIs for website, setting up and configuring web analytics account

Subject 4

Business Analytics & Statistical Methods using R

Unit 1

Business Analytics Basics:

Definition of analytics, Evolution of analytics, Need of Analytics, Business analytics vs business analysis, Business intelligence vs Data Science, Data Analyst Vs Business Analyst, Types of Analytics, Tools for Analytics. Concept of insights. Importance of data in business analytics, Differences between data, information and knowledge, various stages of an organization in terms of data maturity, Options for organizations in the absence of good quality data.

Unit 2

Analytical decision-making:

Analytical decision-making process, characteristics of the analytical decision-making process. Breaking down, a business problem into key questions that can be answered through analytics, Characteristics of good questions, Skills of a good business analyst, Overview of Business analytics applications in – Marketing Analytics, HR Analytics, Supply Chain Analytics, Retail Industry, Sales Analytics, Web & Social Media Analytics, Healthcare Industry, Energy Analytics, Transportation Analytics, Lending Analytics, Sports Analytics. Future of Business Analytics.

Unit 3

Statistics with R:

Computing basic statistics, Business Hypothesis Testing concepts, Basics of statistical modeling, Logistic Regression, comparing means of two samples, testing a correlation for significance, testing a proportion, t test, z Test, F test, Basics of Analysis of variance (ANOVA), One way ANOVA, ANOVA with interaction effects, two way ANOVA, Summarizing Data, Data Mining Basics, Cross tabulation. Case studies in different domains- using R.

Unit 4

Linear Regression:

Concept of Linear regression, Dependency of variables, Ordinary Least Sum of Squares Model, Multiple Linear Regression, Obtaining the Best fit line, Assumptions and Evaluation, Outliers and Influential Observations, Multi-collinearity, Case studies in different domains- using R. Dimension Reduction Techniques – Concept of latent dimensions, need for dimension reduction, Principal Components Analysis, Factor Analysis. Case studies in different domains-using R

Subject 5

Big Data Analytics

Unit 1

Introduction to Data Science: Introduction to data science, The 3 V's: Volume, Velocity, Variety, Why learn Data Science?, Applications of Data Science, The Data Science Lifecycle, Data Scientist's Toolbox, Types of Data Structured, semi-structured, Unstructured Data, Problems with unstructured data, Data sources, Open Data, Social Media Data, Multimodal Data, standard datasets, Data Formats, Integers, Floats, Text Data, Text Files, Dense Numerical Arrays, Compressed or Archived Data, CSV Files, JSON Files, XML Files, HTML Files, Tar Files, GZip Files, Zip Files, Image Files: Rasterized, Vectorized, and/or Compressed.

Unit 2

Statistical Data Analysis: Role of statistics in data science, Descriptive statistics, Measuring the Frequency, Measuring the Dispersion: Range, Standard deviation, Variance, Interquartile Range, Inferential statistics, Hypothesis testing, Multiple hypothesis testing, Parameter Estimation methods, Measuring Data Similarity and Dissimilarity, Data Matrix versus Dissimilarity Matrix, Proximity Measures for Nominal Attributes, Proximity Measures for Binary Attributes, Dissimilarity of Numeric Data: Euclidean, Manhattan, and Minkowski distances, Proximity Measures for Ordinal Attributes, Concept of Outlier, types of outliers, outlier detection methods.

Unit 3

Data Preprocessing: Data Objects and Attribute Types: What Is an Attribute? Nominal, Binary, Ordinal Attributes, Numeric Attributes, Discrete versus Continuous Attributes, Data Quality: Why Preprocess the Data? Data munging/wrangling operations, Cleaning Data – Missing Values, Noisy Data (Duplicate Entries, Multiple Entries for a Single Big Data Analytics

Unit 4

Data Visualization: Introduction to Exploratory Data Analysis, Data visualization and visual encoding, Data visualization libraries, Basic data visualization tools, Histograms, Bar charts/graphs, Scatter plots, Line charts, Area plots, Pie charts, Donut charts, Specialized data visualization tools, Boxplots, Bubble plots, Heat map, Dendrogram, Venn diagram, Treemap, 3D scatter plots, Advanced data visualization tools-Word clouds, Visualization of geospatial.