



Bhavan's Vivekananda College
of Science, Humanities and Commerce
(Sainikpuri, Secunderabad, Telangana - 500094)
Autonomous College - Affiliated to Osmania University
Re-Accredited with "A" grade by NAAC

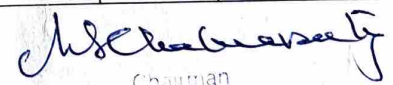
Department of Management Studies

BBA (Honors) - Business Intelligence and Analytics

III Year V Semester (2025-26)

S.no:	Course	Type of Course	No of credits	HPW	CIA+SEE
1	Big Data Analytics	DSC	5	5	30 + 70
2	HR Analytics	DSC	5	5	30 +70
3	Financial Analytics	DSC	5	5	30 +70
4	Marketing Analytics	DSC	5	5	30 + 70
5	Introduction to Artificial Intelligence	DSC	5	5	30 + 70
6	Functional Analytics using Ms Excel (Finance, HR & Marketing)	Practical	2	4	50
Total			27	29	550


SENIOR PROFESSOR
Dept. of Business Management
Osmania University,
Hyderabad-07, T.S., India


Chairman
Board of Studies
Department of Management Studies
Bhavan's Vivekananda College
of Science, Humanities and Commerce
Sainikpuri, Secunderabad-500094.



Bhavan's Vivekananda College
of Science, Humanities and Commerce
(Sainikpuri, Secunderabad, Telangana - 500094)
Autonomous College - Affiliated to Osmania University
Reaccredited with "A" grade by NAAC

Department of Management Studies

BBA (Hons) - Business Intelligence and Analytics

III Year VI Semester (2025-26)

S.no:	Course	Type of Course	No of credits	HPW	CIA+SEE
1	Entrepreneurial Development	DSC	5	5	30 +70
2	Supply Chain Analytics	DSC	5	5	30 +70
3	Introduction to Python	DSC	5	5	30 + 70
4	Optimization Techniques - Prescriptive Analytics	DSC	5	5	30 + 70
5	Basics of Python lab	Practical	1	2	25
6	Project work		6		100
Total			27	22	525

S. Narasimha

SENIOR PROFESSOR
Dept. of Business Management
Osmania University,
Hyderabad-07, T.S., India

M. Chakraborty
Chairman

Board of Studies
Department of Management Studies
Bhavan's Vivekananda College
of Science, Humanities and Commerce
Sainikpuri, Secunderabad-500094.



Bhavan's Vivekananda College
of Science, Humanities and Commerce
(Sainikpuri, Secunderabad, Telangana - 500094)
Autonomous College - Affiliated to Osmania University
Reaccredited with "A" grade by NAAC

Department of Management Studies

PROGRAM NAME: BBA Honors- Business Intelligence and Analytics

COURSE NAME: Big Data Analytics

COURSE CODE: BBA H 581

PPW: 5

YEAR/SEMESTER: III/V

NO. OF CREDITS: 5

COURSE OBJECTIVE: To impart knowledge in students with the concepts of big data, handling huge data for analytics.

UNIT-WISE COURSE OBJECTIVES:

COB1: To inculcate knowledge on big data and Hadoop.

COB2: To demonstrate the concepts of Hadoop ecosystem and Big Data Stack.

COB3: To inculcate knowledge on NoSQL database and Mahout.

COB4: To compare the concepts of Analytics and Reporting and also various analytics tools.

COB5: To illustrate the usage of Big Data Analytics in social media, text mining and Mobile Analytics.

Unit- I

Getting an Overview of Big Data- concept of Big Data- Structuring Big Data- Types of Data- Elements of Big Data- Big Data Analytics-Advantages of Big Data Analytics

Introducing Technologies for Handling Big Data- Introducing Hadoop- Cloud Computing and Big Data- Features of Cloud Computing- Cloud Deployment Models- Cloud Delivery models- Cloud Services for Big Data

Unit- II

Understanding Hadoop Ecosystem- Hadoop Ecosystem- Hadoop Distributed File System- HDFS Architecture- Concepts of Blocks in HDFS Architecture- NameNodes and DataNodes- MapReduce- Hive- Pig and PigLatin- Sqoop- ZooKeeper- Flume- Oozie

Exploring the Big Data Stack- Data Sources Layer- Ingestion Layer- Storage Layer- Physical Infrastructure Layer- Platform Management Layer- Security Layer- Monitoring Layer- Analytics Engine- Visualization Layer

Chairman
Department of Management Studies
Bhavan's Vivekananda College
of Science, Humanities and Commerce
Sainikpuri, Secunderabad-500094.

Unit- III

NoSQL Data Management – Introduction to NoSQL- Benefits and Challenges of NoSQL- Types of NoSQL Data Models- Key-Value Data Model- Column-Oriented Data Model- Document Data Model- Graph Databases- Schemaless Databases- Distribution Models- CAP Theorem- ACID Property concept of Mahout – Machine Learning- Supervised Learning- Unsupervised Learning-Collaborative Filtering- Clustering- Classification

Unit- IV

Comparing Reporting and Analytics- Reporting-Analysis- The Analytic Process- Types of Analytics- Basic Analytics- Advanced Analytics- Operationalized Analytics- Monetized Analytics- Characteristics of Big Data Analytics- Points to Consider during Analysis- Frame the Problem Correctly- Statistical Significance or Business Importance- Making Inferences vs Computing Statistics- Understanding Text Analytics

Introducing Popular Analytical Tools- The R Project for Statistical Computing- Features of R- Limitations of R- IBM SPSS- Features of IBM SPSS- SAS- Features of SAS- Comparing Various Analytical Tools

Unit- V

Social Media Analytics and Text Mining- Introducing social media- Introducing Key Elements of social media- Introducing Text Mining- Understanding Text Mining Process- Sentiment Analysis

Mobile Analytics- Introducing Mobile Analytics- Define Mobile Analytics- Mobile Analytics and Web Analytics- Types of Results from Mobile Analytics- Types of Applications for Mobile Analytics-Mobile Web Analytics- Mobile Application Analytics- Introducing Mobile Analytics Tools- Location Based Tracking- Real-Time Analytics Tools- User Behavior Tracking Tools

Prescribed Book:

1. BIG DATA, Black BookTM,DT Editorial Services, DreamTech Press, 1st Edition ,2016.

Reference Books:

1. BIG DATA and ANALYTICS, Seema Acharya, Subhashini Chellappan, Wiley publications, 2nd Edition, 2015.
2. BIG DATA- Principles and Best Practices of Scalable Real-Time Systems, Nathan Marz and James Warren, 1st Edition, 2015.



Chairman
Board of Studies
Department of Management Studies
Bhavan's Vivekananda College
of Science, Humanities and Commerce
Sainikpuri, Secunderabad-500094.

Unit- III

NoSQL Data Management – Introduction to NoSQL- Benefits and Challenges of NoSQL- Types of NoSQL Data Models- Key-Value Data Model- Column-Oriented Data Model- Document Data Model- Graph Databases- Schemaless Databases- Distribution Models- CAP Theorem- ACID Property
concept of Mahout – Machine Learning- Supervised Learning- Unsupervised Learning-Collaborative Filtering- Clustering- Classification

Unit- IV

Comparing Reporting and Analytics- Reporting-Analysis- The Analytic Process- Types of Analytics- Basic Analytics- Advanced Analytics- Operationalized Analytics- Monetized Analytics- Characteristics of Big Data Analytics- Points to Consider during Analysis- Frame the Problem Correctly- Statistical Significance or Business Importance- Making Inferences vs Computing Statistics- Understanding Text Analytics

Introducing Popular Analytical Tools- The R Project for Statistical Computing- Features of R- Limitations of R- IBM SPSS- Features of IBM SPSS- SAS- Features of SAS- Comparing Various Analytical Tools

Unit- V

Social Media Analytics and Text Mining- Introducing social media- Introducing Key Elements of social media- Introducing Text Mining- Understanding Text Mining Process- Sentiment Analysis

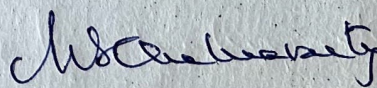
Mobile Analytics- Introducing Mobile Analytics- Define Mobile Analytics- Mobile Analytics and Web Analytics- Types of Results from Mobile Analytics- Types of Applications for Mobile Analytics-Mobile Web Analytics- Mobile Application Analytics- Introducing Mobile Analytics Tools- Location Based Tracking- Real-Time Analytics Tools- User Behavior Tracking Tools

Prescribed Book:

1. BIG DATA, Black Book™,DT Editorial Services, DreamTech Press, 1st Edition ,2016.

Reference Books:

1. BIG DATA and ANALYTICS, Seema Acharya, Subhashini Chellappan, Wiley publications, 2nd Edition, 2015.
2. BIG DATA- Principles and Best Practices of Scalable Real-Time Systems, Nathan Marz and James Warren, 1st Edition, 2015.



Chairman
Board of Studies
Department of Management Studies
Bhavan's Vivekananda College
of Science, Humanities and Commerce
Sainikpuri, Secunderabad-500094.



Bhavan's Vivekananda College
of Science, Humanities and Commerce
(Sainikpuri, Secunderabad, Telangana - 500094)
Autonomous College - Affiliated to Osmania University
Reaccredited with "A" grade by NAAC

Department of Management Studies

PROGRAM NAME: BBA Honors- Business Intelligence and Analytics

COURSE NAME: HR ANALYTICS

PAPER CODE: BBAH 582
YEAR/SEMESTER:III/V

PPW: 5
NO. OF CREDITS: 5

Course Objective: To equip participants with the skills to manage HR data using Excel, create visualizations, apply predictive modeling techniques, and align HR metrics with business strategy to improve workforce planning and enhance organizational performance.

Unit wise Objective:

COB1 To understand the foundation and evolution of HR Analytics, and explore the integration of technology and automation in HR processes.

COB2 To gain knowledge of HR data types, collection methods, data preparation, and Excel tools for effective HR data management and analysis.

COB3 To learn and apply key HR metrics and the HR Scorecard for strategic workforce insights and data-driven HR decision-making.

COB4 To use descriptive analytics and data visualization tools to summarize and communicate HR data effectively.

COB5 To apply predictive modeling techniques such as regression, forecasting, and decision trees to solve HR challenges and support strategic planning.

UNIT I: Foundations of HR Analytics and Technology Integration:

Concept and Definition of HR Analytics - History and Future of HR Analytics - Steps to implement HR Analytics - Benefits of HR Analytics - Applications of HR Analytics - Aligning Human Resources to Business Through HR Analytics (Steps for Alignment of HR Analytics with Business Goals and Strategies) - HR Analytics LAMP Framework - Automation in HR Analytics

Chairman
Department of Management Studies
Bhavan's Vivekananda College
of Science, Humanities and Commerce
Sainikpuri, Secunderabad-500094.

Macros for HR tasks, Automating HR processes – Recruitment, payroll, attendance, employee self-service portals, - Theory only) - HR & Technology Integration (AI in HR – Concept, Applications, Ethical Considerations in AI)

UNIT II: HR Analytics & Data

Introduction - HR Data and Data Quality, Types of HR data- Structured vs. unstructured – Internal vs. external data sources, HR databases and data import methods in Excel (CSV, Text), HR Data Collection -Process of Data Collection for HR Analytics - Data Collection for Effective HR Measurement

Data cleaning and Preparation - Handling missing data and outliers. HR Data Structuring and Transformation, Data Retrieval using V Lookup and H Lookup

UNIT III: HR Metrics

HRIS for HR Decision-making (Concept, Objectives, Advantages, Challenges & Applications) - Concept of HR Metrics – Key HR Metrics (Workforce Planning Metrics, Recruitment Metrics, Employee Performance Metrics, Engagement and Satisfaction Metrics, Diversity, and Inclusion Metrics, Learning and Development Metrics, Absenteeism and Retention Metrics, Succession and Leadership Metrics) - HR Scorecard – Key Components of HR Scorecard

UNIT IV: Descriptive HR Analytics & Data Visualisation

Descriptive HR Analytics Concept – Advantages - Challenges – Applications - Descriptive Statistics for HR Analysis-Measures of central tendency (Mean, Median, Mode) –Measures of dispersion (Standard deviation, Variance, Range), Measures of Position(Percentile, Decile) HR Data Visualization - Concept, Importance, Data Visualisation using Charts, graphs, Heat maps - Pivot Tables for HR Analytics - Types of HR Reporting, HR Dashboard Concept, Types of HR Dashboards

UNIT V: Predictive HR Analytics and Modeling Techniques

Predictive HR Analytics Concept – Advantages - Challenges – Applications - Different phases of HR Predictive Modelling – Workforce demand forecasting using historical data –Time-series forecasting in HR (absenteeism, turnover, hiring needs). Decision Trees for HR Analytics – Predictive Modeling for

Employee Attrition - Regression Analysis for HR Decisions-Simple Linear Regression - Sensitivity & specificity analysis in HR analytics - Scenario analysis with Goal Seek.

Course Outcomes

After the completion of the course, the students will be able to:

CO1 Explain the fundamental concepts of HR Analytics and illustrate how automation and AI are integrated into HR functions.

CO2 Identify and organize various types of HR data, and demonstrate skills in data collection, cleaning, and transformation using Excel tools.

CO3 Analyze key HR metrics and interpret their implications for strategic HR decision-making using HRIS and scorecards.

CO4 Apply descriptive statistical methods and construct meaningful data visualizations and dashboards for HR reporting.

CO5 Develop predictive models using forecasting, regression, and decision trees to evaluate HR challenges such as attrition and workforce planning.

Suggested Readings

1. Bhattacharya, D. K. (2017). HR analytics: Understanding theories and applications. SAGE Publications India.
2. FerminDiez, Mark Bussin, and Venessa Lee (2019). Fundamentals of HR Analytics. Emerald Publishing Limited.
3. Subhashini Sharma Tripathi and Reuben Ray (2022). HR Analytics In-Depth. BPB Publications.

References

1. Banerjee, P., Pandey, J., & Gupta, M. (2019). Practical applications of HR analytics. SAGE Publications India.
2. Manish Soni (2024). HR Analytics – Data Driven Techniques. eBook
3. Dr.Manisha L. Waghmode, Dr.Manisha Shukla, and Dr. Anjali Kalse(2024). HR Analytics for Business Excellence. 1st Ed, RK Publications.
4. Brian E. Becker, Mark A. Huselid, and Dave Ulrich (2011). The HR Score card - Linking People, Strategy, and Performance. Harvard Business School Press.



Chairman
Board of Studies
Department of Management Studies
Bhavan's Vivekananda College
of Science, Humanities and Commerce
Sainikpuri, Secunderabad-500094.



Bharatiya Vidya
Bhavan

Bhavan's Vivekananda College
of Science, Humanities and Commerce
(Sainikpuri, Secunderabad, Telangana - 500094)
Autonomous College - Affiliated to Osmania University
Reaccredited with "A" grade by NAAC

Department of Management Studies

PROGRAM NAME: BBA Honors- Business Intelligence and Analytics

COURSE NAME: Financial Analytics

PAPER CODE: BBAH 583
YEAR/SEMESTER:III/V

PPW: 5
NO. OF CREDITS: 5

Overall Course Objective:

To equip students with the knowledge and practical skills to apply financial analytics techniques, analyze financial statements and risks, evaluate market trends through technical analysis, and understand the transformative role of FinTech and big data in financial decision-making, using tools such as Excel and modern financial modeling approaches.

CO1 : To understand data pre processing techniques and financial functions in Excel to perform exploratory financial analysis.

CO 2: To calculate and analyse financial statements using ratio, trend, and Altman Z-score methods to evaluate organizational performance.

CO3: To understand financial risks through forecasting models and risk measurement tools such as VaR and sensitivity analysis.

CO4: To make students understand basic trading strategies by interpreting technical indicators, candlestick patterns, and charting techniques.

CO5: To understand the role of FinTech and big data in transforming financial services and decision-making processes.

Unit I Introduction to Financial Analytics : Overview of Financial Analytics – Need & Scope of Financial Analytics, Financial Data: Sources, Types and Characteristics - Data Pre processing and Cleaning - Exploratory Data Analysis (EDA) in Financial Analytics .Types of Financial Analytics - overview on Financial Analytics Tools and Techniques-Basic Excel Functions: Financial Functions (NPV, IRR, PV, PMT, XIRR, XNPV).(Theory Only)

Chairman
Board of Studies
Department of Management Studies
Bhavan's Vivekananda College
of Science, Humanities and Commerce
Sainikpuri, Secunderabad-500094.

Unit II: Financial Statement Analytics – concepts of financial statement analytics , key components of Financial statement analytics - Ratio Analysis and Trend Analysis - vertical analysis (common statement), Horizontal (Comparative statement Analysis) - overview on Cash Flow Analysis.(liquidity and operational efficiency) Bankruptcy Prediction Models (Altman Z-score) - Financial Health & Performance Indicator.(Theory Only)

Unit III: Risk Analytics & Forecasting: Definition and Importance of Risk Analytics, Role of Forecasting in Financial Risk Management, Types of Financial Risks: Market, Credit, Liquidity, and Operational Risk, Overview of Risk Management Techniques - Time Series Analysis, Volatility Modeling: GARCH & ARCH Models , Value at Risk (VaR) and Conditional VaR - Scenario and Sensitivity Analysis - Credit Risk Modeling (Theory only)

Unit IV: Technical Analysis and Market Trends :

Definition and Importance of Technical Analysis, Fundamental vs. Technical Analysis: Key Differences, Role of Technical Analysis in Financial Markets, Candlestick Patterns - Open, High, Low, Close (OHLC) and Charting Techniques(Line Charts, Bar Charts, and Point & Figure Charts) , Trend Indicators: Moving Averages(simple moving Average) , Momentum Indicators: RSI, Introduction to Back testing trading strategy.(Theory Only)

Unit V: FinTech and Big Data in Finance: Definition and Evolution of FinTech, Impact of Technology on Financial Services, Role of Big Data in Financial Decision-Making, Applications of FinTech in Banking, Investments, and Insurance.

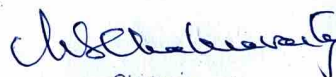
Overview of AI & ML in Financial Analytics - Applications in Finance: Fraud Detection & Risk Assessment, Credit Scoring & Loan Approvals, Customer Personalization in Banking & Investments. Overview on Block chain and Crypto currencies.(Theory Only)

Course Outcomes:

CO1: Students will be able to **apply** Excel-based financial functions and data cleaning techniques for exploratory analysis of financial data.

CO2: Students will be able to **analyze** financial statements using ratio analysis, trend analysis, and Altman Z-score to assess financial performance.

CO3: Students will be able to **evaluate** various financial risks using forecasting models, VaR, and sensitivity analysis tools.



Chairman
Board of Studies
Department of Management Studies
Bhavan's Vivekananda College
of Science, Humanities and Commerce
Sainikpuri, Secunderabad-500094.

CO4: Students will be able to **create** and test trading strategies using technical analysis tools such as RSI, moving averages, and chart patterns.

CO5: Students will be able to **understand** the impact of FinTech and big data on financial services and decision-making processes.

References :

1. Kumar, R. (2021). *Financial Analytics: A Hands-On Approach to Financial Modeling Using Excel and R*. McGraw-Hill Education.
2. **Benninga, S. (2008)**. *Financial modeling* (3rd ed.). MIT Press.
3. Alexander, C. (2008). *Market Risk Analysis, Volume II: Practical Financial Econometrics*. Wiley.
4. Hull, J. C. (2018). *Risk Management and Financial Institutions* (5th ed.). Wiley.
5. Murphy, J. J. (1999). *Technical Analysis of the Financial Markets: A Comprehensive Guide to Trading Methods and Applications*. New York Institute of Finance.
6. Arner, D. W., Barberis, J., & Buckley, R. P. (2017). *FinTech and RegTech in a Nutshell, and the Future in a Sandbox*. CFA Institute Research Foundation.

Suggested Readings:

1. Brooks, C. (2019). *Introductory Econometrics for Finance* (4th ed.). Cambridge University Press.
2. Chan, E. (2013). *Algorithmic Trading: Winning Strategies and Their Rationale*. Wiley.
3. Tiwari, A., & Jain, P. (2020). *Big Data and Financial Analytics in India*. Springer.
4. Pathak, B. V. (2014). *Indian Financial System* (5th ed.). Pearson Education



Chairman
Board of Studies
Department of Management Studies
Bhavan's Vivekananda College
of Science, Humanities and Commerce
Sainikpuri, Secunderabad-500094.



Bhavan's Vivekananda College
of Science, Humanities and Commerce
(Sainikpuri, Secunderabad, Telangana - 500094)
Autonomous College - Affiliated to Osmania University
Reaccredited with "A" grade by NAAC

Department of Management Studies

PROGRAM NAME: BBA Honors- Business Intelligence and Analytics

COURSE NAME: Marketing Analytics

PAPER CODE: BBAH 584

PPW: 5

YEAR/SEMESTER:III/V

NO. OF CREDITS: 5

Course Objectives:

- 1.To understand the importance of marketing analytics and its application in businesses
- 2.To know about Summarizing Marketing Data
- 3.To make the students know about customer analytics
- 4.To provide insights of Pricing analytics
- 5.To make the students know about market segmentation and promotion analytics

Unit-I: Introduction to Marketing Analytics: Definition, Need and Scope of Marketing Analytics, Marketing Analytics Vs Marketing Research, Levels in Marketing Analytics, Adoption and Application of Marketing Analytics, Marketing Analytics and Business Intelligence. MS Excel as a Tool for conduction of Marketing Analytics.

UNIT-II: Summarizing Marketing Data: Summarizing Revenue Data: Month-wise and Product-wise. Slicing & Dicing of Data: Pareto Principle, Report Filters and Slicers. Demographic Analysis: Analysing Sales Data by Age, Gender, Income and Location.

UNIT-III: Customer Analytics: Customer Journey Mapping and the Process of Mapping (How to). Metrics for Tracking Customer Experience: Customer Feedback Metrics & Behaviours. Derived Customer Metrics. Customer Persona, Building a Customer Persona and its Benefits, Customer Lifetime Value (CLV), Calculating Customer Lifetime Value: Creating the Basic Customer Value Template.

[Signature]
Chairman
Board of Studies
Department of Management Studies
Bhavan's Vivekananda College
of Science, Humanities and Commerce
Sainikpuri, Secunderabad-500094.

Unit-IV: Pricing Analytics : Pricing, Goals of Pricing, Price Elasticity, Estimating Linear and Power Demand Curves, Using Excel Solver to Optimize Price. Price Bundling, Bundling Prices to Extract Consumer Surplus, Mixed Bundling, Using Evolutionary Solver to Find Optimal Bundle Prices. Price Skimming.optimising Distribution using excel solver.

Unit - V: Segmentation & Promotion Analytics: Segmentation Analytics: Cluster Analysis and its Applications, Location-wise Clustering, Using Solver to find Optimal Clusters. Using Conjoint Analysis to Segment a Market, Using Decision Trees for Segmenting the Market. Promotion Analytics: Promotions and Types of Promotions, Discounting & Types of Discounting. Measuring the effectiveness of Advertising: The Ad stock Model, Pay per Click Advertising

Suggested readings

- 1.Seema Gupta & Avadhoot Jathar, Marketing Analytics, Wiley, 2021.
- 2.Wayne L. Winston, Marketing Analytics: Data Driven Techniques with Microsoft Excel, 2014.
- 3.Chuck Hermann, Ken Burbary, Digital Marketing Analytics, Que Publishing, 2e, 2018.
4. Moustusy Maity and Pavankumar Gurazada, Marketing Analytics for Strategic Decision Making, Oxford Higher education, 2021.

References

1. Mike Grigsby, Marketing Analytics, Kogan Page, 2015.
- 2.Robert Kozielski, Measuring Marketing Analytics, Emerald Publishing, 2018
3. Mark Jeffery, "Data-driven Marketing: The 15 Metrics Everyone in Marketing Should Know" by HB 2010 JOHN WILEY
- 4.Barry Leventhal, Predictive Analytics for Marketers: Using Data Mining for Business, Kogan Page; 1st edition (3 February 2018);

Course Outcomes:

At the end of the course students will be able to

- 1.Develop an understanding about importance of marketing analytics
- 2.Develop an idea of Summarizing Marketing Data
- 3.Familiarize students about customer analytics
- 4.Develop students to know about Pricing analytics
5. Identify students to know more about market segmentation and promotion analytics



Chairman
Board of Studies
Department of Management Studies
Bhavan's Vivekananda College
of Science, Humanities and Commerce
Sainikpuri, Secunderabad-500094.



Bharatiya Vidya
Bhavan

**Bhavan's Vivekananda College
of Science, Humanities and Commerce**

(Sainikpuri, Secunderabad, Telangana - 500094)

**Autonomous College - Affiliated to Osmania University
Reaccredited with "A" grade by NAAC**

Department of Management Studies

PROGRAM NAME: BBA Honors- Business Intelligence and Analytics

COURSE NAME: Artificial Intelligence

PAPER CODE: BBAH 585

PPW:5

YEAR/SEMESTER: III/V

NO. OF CREDITS: 5

COURSE OBJECTIVE: To help students understand and practice core concepts of AI, problem-solving, search algorithms, machine learning, and neural networks.

Unit Wise Objectives:

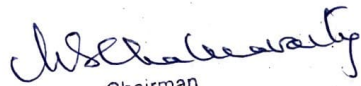
Cob1: To provide an understanding of the definition, scope, evolution, techniques, and challenges of Artificial Intelligence while comparing it with human intelligence.

Cob2: To enable students to understand problem-solving concepts, processes, and AI search methods and their applications in business contexts.

Cob3: To develop the ability to apply AI tools such as descriptive AI, generative AI, and prompt engineering for effective business decision-making and communication of insights.

Cob4: To make students familiar with the application of AI in marketing, sales forecasting, supply chain management, financial analysis, HR, healthcare, and education.

Cob5: To provide an understanding of AI ethics, governance, bias mitigation, security, and its impact on economy, employment, and sustainability for future readiness.


Chairman
Board of Studies
Department of Management Studies
Bhavan's Vivekananda College
of Science, Humanities and Commerce
Sainikpuri, Secunderabad-500094.

Unit - I: Introduction to Artificial Intelligence:

Introduction: Artificial Intelligence – Definition and Scope, Evolution of Artificial Intelligence, Advantages and Challenges of AI, AI Techniques, AI vs Human Intelligence

Unit-II: Problem solving Search Methods in AI:

Problem Solving: Concept, Types of Problems, Problem-Solving Agents, Problem-Solving Process- (Define the problem, Formulate the problem, choose control strategy, Search/explore possible solutions, Test and find the goal, Execute and optimize) . General Search Algorithm-Definition, Classification of Search Methods in AI: Uniformed Search Methods: Breadth First Search (BFS), Uniform Cost Search, Depth First Search (DFS), Depth Limited Search (DLS), Iterative Deepening Search (IDS) Informed Search: Greedy Best First Search, A* Search, Hill climbing search, Admissible Heuristic Search, Memory Bounded Heuristic Search IDA* search, AO* search, Business Applications of Search Methods.

Unit III: AI for Business Decision-Making: Introduction to AI in Business Analytics, Core Responsibilities of an AI Business Analyst, Essential Skills for an AI Business Analyst, Discriminative AI, Generative AI, Prompt Engineering for Business Tasks, AI systems in Business, Data Visualization with AI-Powered Platforms, Storytelling with Data and AI, and Best Practices for Presenting AI-Driven Insights.

Unit IV: Application of AI in the Key Business Areas: Applying AI for Effective Marketing and Customer Relationship Management, Sales Forecasting & Demand Prediction, Optimal Supply Chain Management, Financial Analysis & Risk Management, HR & Talent Management, Health Care and Education

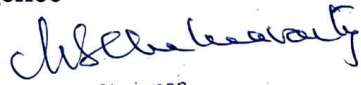
Unit V: Ethical & Societal Implications and Future Perspectives of AI: Overview of AI Risk & Governance, Mitigating Bias in AI Systems, AI Regulatory Frameworks, Managing AI Security Concerns, Impact of AI on Economy & Employment, Future of AI, AI Sustainability.

Suggested Readings:

Artificial Intelligence in Business by Pavankumar Gurzada and Seema Gupta

References:

1. Nils J Nilsson, Artificial Intelligence: A New Synthesis
2. Kevin Knight, Elaine Rich, B Nair, Artificial Intelligence


Chairman
Board of Studies
Department of Management Studies
Bhavan's Vivekananda College
of Science, Humanities and Commerce
Sainikpuri, Secunderabad-500094.

3. Stuart Russell, Peter Norvig, Artificial Intelligence: A Modern Approach
4. Eugene Chamiak, Drew McDermott, Introduction to Artificial Intelligence
5. Vinod Chandra SS, Anand-Hareendran S, Artificial Intelligence and Machine Learning.

Course Outcomes:

By the end of the course, the students will be able to:

CO1: explain the scope, evolution, advantages, challenges, and techniques of Artificial Intelligence.

CO2: apply different AI search strategies to solve business and computational problems.

CO3: utilize AI tools and techniques for analyzing data and supporting effective business decision-making.

CO4: demonstrate the use of AI in marketing, sales, supply chain, finance, HR, healthcare, and education.

CO5: ethical, societal, and regulatory issues of AI and its impact on the future of work and sustainability



Chairman
Board of Studies
Department of Management Studies
Bhavan's Vivekananda College
of Science, Humanities and Commerce
Sainikpuri, Secunderabad-500094.



Bharatiya Vidya
Bhavan

Bhavan's Vivekananda College
of Science, Humanities and Commerce
(Sainikpuri, Secunderabad, Telangana - 500094)
Autonomous College - Affiliated to Osmania University
Re-Accredited with "A" grade by NAAC

Department of Management Studies

PROGRAM NAME: BBA Honors- Business Intelligence and Analytics

Course Name: Functional Analytics using Excel (LAB Practicals)

Paper Code: BBA H 586

PPW: 4

Year/Semester: III/V

No of Credits:2

Course Objectives:

COB1 To equip learners with practical skills in analyzing and managing HR data using statistical tools and Excel-based techniques for effective decision-making in areas like compensation, workforce planning, and employee development.

COB2 To enable participants to interpret, visualize, and forecast HR trends using data-driven approaches for improving employee performance, budgeting, and strategic HR planning.

COB3 : To understand Excel-based financial functions (NPV, IRR, PV, PMT, XIRR, XNPV), perform financial statement analysis (ratio, comparative, common size, Altman Z-score), and to analyze risk using sensitivity and scenario analysis to assess business performance.

COB4: To understand candlestick patterns (single, dual, triple), chart patterns (support/resistance, head & shoulders, gaps), and technical indicators (SMA, EMA, RSI).

COB5: To make students understand the existence of the tools, and to apply these tools, interpret the input and communicate the output from these tools and models, and apply them to assist marketing and other business decisions.

Course Name: HR Analytics Lab

1. Data Cleaning & Preparation

- Handling Missing Data using logical and error-handling functions
- Identifying and Removing Outliers using statistical and conditional functions
- Text Data Cleaning and Transformation using text functions
- Data Structuring and Transformation Using Lookup Functions


Chairman

Board of Studies

Department of Management Studies
Bhavan's Vivekananda College
of Science, Humanities and Commerce
Sainikpuri, Secunderabad-500094.

2. Workforce Planning & Acquisition

- Conduct trend analysis for workforce planning and projecting hiring needs.
- Identify trends in workforce distribution (e.g., turnover rates, Absenteeism).
- Analyze employee distribution by grade level and propose expansion plans.
- Use IF, AVERAGEIF, and COUNTIF functions to evaluate and compare hiring channel performance based on time-to-hire, cost-per-hire, and selection rate.

3. Employee Performance & Development

- Create heat maps for performance analysis using Conditional Formatting.
- Conduct regression analysis to evaluate the impact of work experience on salary.
- Build decision trees to determine promotion eligibility based on performance and tenure.
- Analyze the proportion of employees in leadership roles (higher levels) versus mid/operational roles (mid and lower levels) to assess the organization's leadership pipeline.

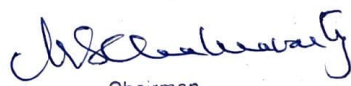
4. Compensation & Benefits Analysis

- Benchmark compensation using percentile analysis to determine competitive salary bands.
- Apply Goal Seek for planning salary increases or compensation adjustments.
- Identify and analyze pay disparities across departments.
- Use Scenario Analysis for HR budgeting and compensation planning.

After the completion of the course, the students will be able to:

CO1: Analyze HR data using Excel functions and statistical techniques to identify trends in employee performance, compensation, and workforce distribution.

CO2: Create interactive dashboards and predictive models to support data-driven decisions in HR planning and development.


Chairman
Board of Studies
Department of Management Studies
Bhavan's Vivekananda College
of Science, Humanities and Commerce
Sainikpuri, Secunderabad-500094.

References

1. Dr. Manisha L. Waghmode, Dr. Manisha Shukla, and Dr. Anjali Kalse (2024). HR Analytics for Business Excellence. 1st Ed, RK Publications.
2. Manish Soni (2024). HR Analytics – Data Driven Techniques. eBook
3. Michael Walsh (2021). Hr Analytics Essentials You Always Wanted to Know. Vibrant Publishers.
4. John H. Davis (2011). Statistics for Compensation – A Practical guide to compensation analysis. Wiley.
5. Boyce Byerly, Gene Pease, and Jac Fitz-enz (2015). Human Capital Analytics: How to Harness the Potential of Your Organization's Greatest Asset. Wiley

COURSE NAME: Lab on Financial Analytics

- 1) Basic Financial functions in Excel: NPV, IRR, PV, PMT, XIRR, XNPV.
- 2) Ratio analysis , comparative and common size statement analysis in excel, Altman Z score in excel
- 3) Sensitivity analysis and scenario analysis in excel
- 4) Candlestick analysis – (One candle, Two candle and Three candle patterns), Pattern Study - (Support and resistance lines, Head and shoulders, Double top and double bottom)
- 5) Major Indicators & Oscillators - Simple moving average, Relative strength index in excel.

COURSE NAME: Lab- Marketing Analytics Practical

1. Using MS Excel to Organize and Summarize Marketing Data: Creation of Pivot Tables and Organizing Data. Construction of Crosstabs of Two Demographic Variables. Using GET PIVOT Function for Pulling Data. Adding Data Labels and Data Tables.
2. Using Excel Solver to Optimize Price. Price Bundling, Price Skimming.
3. Using Solver to find Optimal Clusters. Using Conjoint Analysis to Segment a Market.
4. calculation of customer lifetime value using excel solver
5. Optimizing Distribution using Ms Excel solver

After the completion of the course, the students will be able to:

CO1: Analyze HR data using Excel functions and statistical techniques to identify trends in employee performance, compensation, and workforce distribution.

CO2: Create interactive dashboards and predictive models to support data-driven decisions in HR planning and development.


Chairman
Board of Studies
Department of Management Studies
Bhavan's Vivekananda College
of Science, Humanities and Commerce
Sainikpuri, Secunderabad-500094.

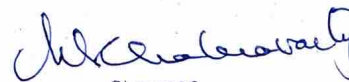
C03: Apply Excel-based financial functions and financial statement analysis techniques (ratio, common size, comparative score), and analyze business performance using sensitivity and scenario analysis tools.

C04: Analyze candlestick and chart patterns with technical indicators such as moving averages and RSI.

C05: Understand the relationship between Marketing Analytics, and marketing Analytics are applied in various marketing strategies.

References

1. Dr. Manisha L. Waghmode, Dr. Manisha Shukla, and Dr. Anjali Kalse (2024). HR Analytics for Business Excellence. 1st Ed, RK Publications.
2. Manish Soni (2024). HR Analytics – Data Driven Techniques. eBook
3. Michael Walsh (2021). Hr Analytics Essentials You Always Wanted to Know. Vibrant Publishers.
4. John H. Davis (2011). Statistics for Compensation – A Practical guide to compensation analysis. Wiley.
5. Boyce Byerly, Gene Pease, and Jac Fitz-enz (2015). Human Capital Analytics: How to Harness the Potential of Your Organization's Greatest Asset. Wiley Benninga, S. (2008). *Financial modeling* (3rd ed.). MIT Press.
6. Mayes, T. R., & Shank, T. M. (2018). *Financial analysis with Microsoft Excel* (8th ed.). Cengage Learning.
7. Pingle, S. (2022). *Mastering Financial Modelling in Excel: A practical guide to financial analysis, forecasting, and modelling*. McGraw-Hill Education.
8. Brown, M. G. (2021). *Technical Analysis for Beginners: Your Guide to Candlestick Charting, Stock Trading, and Risk Management*. Create Space Independent Publishing.



Chairman
Board of Studies
Department of Management Studies
Bhavan's Vivekananda College
of Science, Humanities and Commerce
Sainikpuri, Secunderabad-500094.

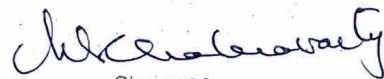
C03: Apply Excel-based financial functions and financial statement analysis techniques (ratio, common size, comparative, Altman Z-score), and analyze business performance using sensitivity and scenario analysis tools.

C04: Analyze candlestick and chart patterns along with technical indicators such as moving averages and RSI.

C05: Understand the relationship between Marketing Analytics, and marketing Analytics are applied in various marketing strategies.

References

1. Dr. Manisha L. Waghmode, Dr. Manisha Shukla, and Dr. Anjali Kalse (2024). HR Analytics for Business Excellence. 1st Ed, RK Publications.
2. Manish Soni (2024). HR Analytics – Data Driven Techniques. eBook
3. Michael Walsh (2021). Hr Analytics Essentials You Always Wanted to Know. Vibrant Publishers.
4. John H. Davis (2011). Statistics for Compensation – A Practical guide to compensation analysis. Wiley.
5. Boyce Byerly, Gene Pease, and Jac Fitz-enz (2015). Human Capital Analytics: How to Harness the Potential of Your Organization's Greatest Asset. Wiley Benninga, S. (2008). *Financial modeling* (3rd ed.). MIT Press.
6. Mayes, T. R., & Shank, T. M. (2018). *Financial analysis with Microsoft Excel* (8th ed.). Cengage Learning.
7. Pingle, S. (2022). *Mastering Financial Modelling in Excel: A practical guide to financial analysis, forecasting, and modelling*. McGraw-Hill Education.
8. Brown, M. G. (2021). *Technical Analysis for Beginners: Your Guide to Candlestick Charting, Stock Trading, and Risk Management*. Create Space Independent Publishing.



Chairman
Board of Studies
Department of Management Studies
Bhavan's Vivekananda College
of Science, Humanities and Commerce
Sainikpuri, Secunderabad-500094.



Bhavan's Vivekananda College

of Science, Humanities and Commerce

(Sainikpuri, Secunderabad, Telangana - 500094)

Autonomous College - Affiliated to Osmania University

Reaccredited with "A" grade by NAAC

Department of Management Studies

PROGRAM NAME: BBA Honors- Business Intelligence and Analytics

COURSE NAME: Entrepreneurial Development

PAPER CODE: BBAH 681

PPW: 5

YEAR/SEMESTER:III/VI

NO. OF CREDITS: 5

Course Objectives:

COB1: To make students understand the concept of Entrepreneur and Entrepreneurship.

COB2: To prepare a business plan.

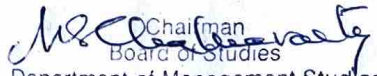
COB3: To understand the structure, scope, and significance of MSMEs in economic development

COB4: To make students aware of different Funding assistance

COB5: To make students aware of Entrepreneurial Skills

UNIT-I: Entrepreneur and Entrepreneurship- Introduction, Concept of Entrepreneur, Characteristics of Entrepreneur - Types of Entrepreneurs, Definition of Entrepreneurship, Characteristics of Entrepreneurship. Role of Entrepreneurship in Economic development in India, Concept of Rural, Women and Social Entrepreneurship.

Unit-II: Business Plan: Setting up a New Enterprise - Idea Generation - Feasibility Study - SWOT analysis. Business Plan - Importance of Business Plan. Steps in writing an effective Business Plan - Executive summary - Business Description-Operations Plan- Organisation & Management - Legal Structure of Business- Products and Services- Marketing and Sales Strategy - Competitive Analysis-Unique Selling Proposition-Financial Plan.


Chairman
Board of Studies
Department of Management Studies
Bhavan's Vivekananda College
of Science, Humanities and Commerce
Sainikpuri, Secunderabad-500094.

Unit-III: SMALL, MICRO, MEDIUM SCALE ENTERPRISES: Definition and Classification of Micro, Small and Medium Enterprises as per MSMED Act, 2006 (Revised definitions included), Features and objectives of Small Scale Industries, Scope of Micro and Small Enterprises in rural and urban areas. Types of MSMEs, Identification of business opportunities, role of innovation and technology in MSME entrepreneurship, Role in Inclusive and Sustainable Development, MSMEs in rural industrialization and women empowerment.

UNIT-IV: Financial Assistance & Funding Agencies: Financial schemes offered by various financial institutions like Commercial Banks, IDBI, ICICI, SIDBI, SFCs, Venture Capital Funding, Angel Capitalist. Role of Central Government and State Government in promoting Entrepreneurship with various incentives, subsidies, grants.

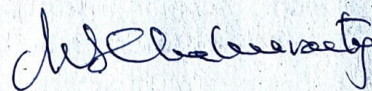
Unit-V: Entrepreneurial Skills: Introduction & Meaning of Entrepreneurial skills, The Entrepreneurial Mindset, Types of Entrepreneurship Skills: Business management skills, Teamwork and leadership skills, Communication and listening, Customer service skills, Financial skills, Analytical and problem-solving skills, Critical thinking skills, Strategic thinking and planning skills, Technical skills, Time management and organizational skills, Branding, marketing and networking skills, How to improve entrepreneurial skills, Entrepreneurial skills in the workplace, Entrepreneurial Imagination And Creativity.

Suggested Readings:

1. Dr.S.S. Khanka, 2007 'Entrepreneurial Development' S.Chand and Co.ltd.
2. Entrepreneurial Skills by Cecile Nieuwenhuizen Juta and Company Ltd, Apr-2009
3. Desai, Vasant. *Small Scale Industries and Entrepreneurship*. Himalaya Publishing.

References:

1. Dr. Narayana Reddy, Entrepreneurship – Text and Cases', 2010, Engage Learning New Delhi.
2. The Joy of Achievement: A conversation with J.R.D. Tata by R.M.Lala -1995.



Chairman
Board of Studies
Department of Management Studies
Bhavan's Vivekananda College
of Science, Humanities and Commerce
Sainikpuri, Secunderabad-500094.

Course Outcomes:

At the end of the course Students will be able to

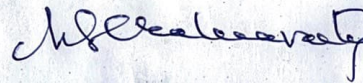
CO1: Explain the concept of Entrepreneur and Entrepreneurship.

CO2: Enhance the Entrepreneurial skill

CO3: Prepare a business plan.

CO4: Students will be able to analyze the opportunities and challenges within the MSME sector.

CO5: Explore different financial options and funding agencies supporting Entrepreneur.



Chairman
Board of Studies
Department of Management Studies
Bhavan's Vivekananda College
of Science, Humanities and Commerce
Sainikpuri, Secunderabad-500094.



Bhavan's Vivekananda College

of Science, Humanities and Commerce

(Sainikpuri, Secunderbad, Telangana - 500094)

Autonomous College - Affiliated to Osmania University

Reaccredited with "A" grade by NAAC

Department of Management Studies

PROGRAM NAME: BBA Honors- Business Intelligence and Analytics

COURSE NAME: Supply Chain Analytics

PAPER CODE: BBAH 682

YEAR/SEMESTER:III/VI

PPW: 5

NO. OF CREDITS: 5

Course Objectives:

1. To understand the basic concepts of Supply Chain Management, data cleaning and storage.
2. To gain knowledge on the tools for Inventory Management Analytics.
3. To develop transportation models and understand ways to optimize transportation costs and improve logistics and distribution efficiency using Excel Solver.
4. To understand ways to optimize warehouse space utilization and storage through Warehouse Management Analytics.
5. To learn ways to integrate advanced technologies like IoT, AI, and block chain into supply chain processes.

Unit I: Introduction to Supply Chain Management

Basic Concepts: Objectives, functions, types of flows-materials, money, information; Evolution of supply chain management; Decision areas in Supply Chain Management; Methods for Data Collection: Techniques for gathering relevant supply chain data from various sources. Overview on Data Cleaning, Integration, and Storage: Processes to ensure data accuracy, consistency, and secure storage. Big Data Technologies:

Chairman
Board of Studies
Department of Management Studies
Bhavan's Vivekananda College
of Science, Humanities and Commerce
Sainikpuri, Secunderabad-500094.

Application of big data tools and technologies in managing supply chain data. An Overview on Data Analysis Software and Platforms: ERP Systems (Enterprise Resource Planning), Business Intelligence (BI) Tools- Platforms: Sisense, Tableau, Power BI, and Qlik View; Data Analytics software: KNIME and SAS.

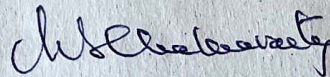
Unit II: Inventory Management

Importance of Inventory Management in Supply Chains, Types of Inventory, Types of Inventory Carrying Costs, Economic Order Quantity (EOQ), safety stock, and reorder points to manage inventory levels. Methods for Inventory Analysis: ABC, HML, VED, safety stock Analysis;

Inventory Management Analytics: Data Visualization Tools: Presenting data in a clear and concise manner through charts, graphs, and dashboards to facilitate decision-making; Demand Forecasting: Using historical data, trends, and seasonal patterns to predict future demand through Time Series Analysis and Forecasting Techniques; Machine Learning: Utilizing AI algorithms to learn from data and predict future inventory needs. Optimization Algorithms: Employing algorithms to determine optimal stock levels, reorder points, and other inventory management parameters; Reducing over-stocking, stock-outs and minimize storage costs; Multi-Echelon Inventory Optimization: Techniques For Optimizing inventory across multiple stages of the supply chain.

Unit III: Transportation and Distribution Management

Transportation Models and Cost Optimization: Methods to optimize transportation costs and improve logistics efficiency-optimizing routes for inbound and outbound shipments, reducing costs and transit times; Logistics Management and Distribution Strategies: Planning and Management of logistics activities and distribution networks; Role of technology: The impact of technological advancements on transportation and logistics management. Network Design and Optimization: Core concepts in designing an efficient supply chain network; Utilization of tools like Excel Solver for network optimization.



Chairman
Board of Studies
Department of Management Studies
Bhavan's Vivekananda College
of Science, Humanities and Commerce
Sainikpuri, Secunderabad-500094.

Unit IV: Warehouse Management

Types of warehouses, Warehouse processes, Warehouse Automation, Warehouse Management System; Warehouse layout optimization: Space optimization, Efficient work flow, Strategic placement of products, Material Handling Equipment, Data-driven slotting-Utilize data from Warehouse Management Systems (WMS) to determine the most optimal storage locations for different items; lean principles to minimize waste in the layout design; Steps to optimize Warehouse layout. Warehouse Management Analytics: machine learning, computer vision, and robotics to improve efficiency, reduce costs, and optimize processes.

Unit V: Digital Transformation of supply chains

Industry 4.0: Integration of advanced technologies like IOT, AI, and Block chain into supply chain processes; Digital Twins: Utilizing digital twins for simulation and optimization of supply chain operations; Decision Analysis Tools: Tools such as decision trees and Monte Carlo simulations for making informed supply chain decisions; Cyber security: Ensuring the security of supply chain data and systems against cyber threat; Emerging Trends: Insights into new developments, Innovations, Challenges and Opportunities in supply chain analytics; Sustainable Practices: Green Supply Chains-Implementing eco-friendly practices in supply chain operations. Case Studies and Real-World Applications: Analysis of real-world cases where supply chain analytics have been successfully implemented.

Suggested Readings:

1. Sahay, BS, "Supply Chain Management", - in the 21st Century, 2009, 1st Ed. Macmillan.
2. Shekhar B., Acharyalu G.V.R.K, "Logistics and Supply Chain Management, 2008, Excel Books.
3. Altekar, V. Rahul, "Supply Chain Management", 2005, PHI.
4. Kurt Y. Liu, "Supply Chain Analytics: Concepts, Techniques and Applications." (2022 edition).
5. Martin Christopher, "Logistics and Supply Chain Management"

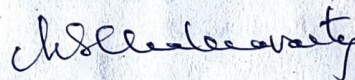
Chairman
Department of Management Studies
Bhavan's Vivekananda College
of Science, Humanities and Commerce
Sainikpuri, Secunderabad-500094.

Suggested Books:

1. Michael H.Hugos, "Essentials of Supply Chain Management."
2. Supply Chain Analytics: Strategies, Models and Solutions
3. Big Data Analytics in Supply Chain Management: Theory and Applications

Course Outcomes:

1. Enumerate the objectives and functions of supply chain management.
2. Use inventory management analytics to optimize inventory levels and costs and enhance supply chain efficiency.
3. Use transportation analytics to optimize transportation costs and improve logistics and distribution efficiency.
4. Apply Warehouse management analytics to optimize warehouse space and storage.
5. Integrate advanced technologies like IoT, AI, and block chain into supply chain processes and implement eco-friendly/green practices supply chain operations.



Chairman
Board of Studies
Department of Management Studies
Bhavan's Vivekananda College
of Science, Humanities and Commerce
Sainikpuri, Secunderabad-500094.



Bhavan's Vivekananda College

of Science Humanities and Commerce

(Sainikpuri, Secunderbad, Telangana - 500094)

Autonomous College - Affiliated to Osmania University

Reaccredited with "A" grade by NAAC

Department of Management Studies

PROGRAM NAME: BBA Honors- Business Intelligence and Analytics

COURSE NAME: Introduction to Python

PAPER CODE: BBAH 683

PPW: 5

YEAR/SEMESTER: III/VI

NO. OF CREDITS: 5

COURSE OBJECTIVE: To help students gain a foundational understanding of Python programming with emphasis on control structures, data types, and essential programming concepts.

UNIT-WISE COURSE OBJECTIVES:

COB1: Understand the basics of Python programming and learn to use control structures and arrays effectively.

COB2: Learn how to manipulate strings and create reusable code using functions.

COB3: Gain the ability to work with Python's collection data types like lists, tuples, and dictionaries for efficient data handling.

COB4: Understand how to handle errors and perform file operations for data storage and retrieval.

COB5: Learn to use the Pandas library for data analysis and handle data input/output through various file formats.


Chairman

Board of Studies

Department of Management Studies
Bhavan's Vivekananda College
of Science, Humanities and Commerce
Sainikpuri, Secunderabad-500094.

UNIT-I: Introduction to Python, Control Statements, Arrays

Introduction to Python: Python, Features of Python, Flavours of Python, Comparison between C and Python, Input and Output statements, Data types in python, Operators in Python. **Control Statements:** The if, the if-else, the if-elif-else statements, the while loop, the for loop. **Arrays:** Types of arrays, working with arrays using NumPy.

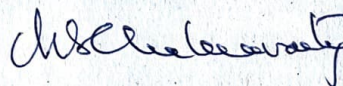
UNIT- II: Strings , Functions Strings and Characters: Creating Strings, Length of a String, Indexing in Strings, Slicing the strings, Repeating the Strings, Concatenation of Strings, Checking Membership, Comparing Strings, Removing Spaces from a String, Finding Substrings, Counting Substrings in a string, Strings are Immutable, Replacing a String with another string, Splitting and Joining Strings, Changing Case of a String, Checking Starting and Ending of a String, String Testing methods, Formatting the Strings, Working with Characters, Sorting Strings, Finding number of characters and words, Inserting Substring into a String.

Functions: Defining a function, calling a function, Formal and Actual arguments, returning results from a function, returning multiple values from a function, Positional Arguments, keyword Arguments, Default Arguments, Variable length Arguments, local and Global Variables.

UNIT -III: Lists, Tuples , Dictionaries

Lists and Tuples: List, Creating lists using range() function, Updating the elements of a List, Concatenation of two lists, Repetition of Lists, Membership in Lists, Aliasing and Cloning Lists, Methods to process lists, Finding Biggest and Smallest Elements in the Lists, Sorting the List elements, Number of Occurrences of an element in the List, Finding common elements in two lists, Storing different types of data in a List, Nested Lists, Tuples, Creating tuples, Accessing the Tuple elements, Basic operations on Tuples, Functions to process tuples, Nested Tuples, Inserting elements in a Tuple, Modifying elements of a Tuple, Deleting elements from a Tuple

Dictionaries: Operations on Dictionaries, Dictionary functions.



Chairman
Board of Studies
Department of Management Studies
Bhavan's Vivekananda College
of Science, Humanities and Commerce
Sainikpuri, Secunderabad-500094.

UNIT-IV: Exceptions, Files in Python

Exceptions: Errors in Python Program- Compile Time Errors, Run time errors, Logical Errors, Exceptions, Exception handling, Types of Exceptions, The Except block, The Assert Statement, User Defined Exceptions.

Files in Python: Files, Types of Files in Python, Opening a File, Closing a File, Working with Text Files containing Strings, Knowing whether a File exists or not, Working with Binary Files, The with statement, The seek() and tell() methods, Working with Directories.

UNIT-V: Introduction to Pandas, DataFrame, Reading and Writing Data, Data Visualization

Introduction to Pandas: Series- Indexing, Apply(), Filtering with a Boolean Array, Creating Series Objects from Dictionaries, NAN- Missing Data, ISNULL() and NOTNULL() methods, Connecting between NAN and NONE, Filtering out Missing Data, Filling in Missing Data.

Data Frame: Introduction, Data frames from Dictionaries, Retrieving the column names, Custom Index, Rearranging the Order of Columns, Existing Columns as the Index of a Data frame, Accessing Rows via Index Values, Adding Rows to a Data frame, Accessing Rows by Position, Sum and Cumulative Sum, Assigning New Values to Columns, Accessing the Columns of a Data frame, Assigning New Values to a Column, Sorting Data frames, Inserting New Columns into Existing Data frames, Creating a Data frame by Appending Rows, Filling a Data frame with Random Values. **Reading and Writing Data:** Introduction, Delimiter-Separated Values, Reading CSV and DSV Files, Writing CSV Files, Reading and Writing Excel Files,

Data Visualization: Matplotlib Object Hierarchy and Important Terms, Generate Figure and Axes, Labels on Axes, The Plot Function, Checking and Defining the Range of Axes, "Linspace" to Define X Values, Changing the Line Style, Scatter Plots in Matplotlib, Shading Regions with fill between(). **Spines and Ticks:** Moving the Border Lines and Polishing up the Axes Notations, Customizing Ticks, Setting Tick Labels, Adjusting the Tick Labels, Adding a Legend, Annotations. **Subplots:** Creating Subplots with Subplots. **Histograms**

and Bar Plots: Introduction, Bar Plots, Bar plots with Customized Ticks, Vertical Bar Charts (Line Charts), Grouped Bar Charts. Stacked Bar Charts.

Suggested Books:

1. Core Python Programming, Dr.R.Nageswara Rao, Dreamtech Press, Second Edition, 2019.
2. Data Analysis- NumPy, Matplotlib and Pandas, By Bernd Klein, 2021.
https://python-course.eu/books/bernd_klein_python_data_analysis_a4.pdf

Reference Books:

1. Python for Beginners, Harsh Bhasin, New Age International (P) Ltd. Publishers, 1st Edition, 2019.
2. Learning Python, Mark Lutz, Davis Ascher, O'Reilly Media Inc, Second Edition, 2003.
3. The complete reference Python, Brown Martin C, McGraw Hill Education India, 4th Edition, 2018.

COURSE OUTCOMES: At the end of the course students will be able to

CO1: Apply Python basics, control structures, and arrays to develop simple programs.

CO2: Use string operations and functions to create modular code.

CO3: Work with lists, tuples, and dictionaries for effective data



Chairman
Board of Studies
Department of Management Studies
Bhavan's Vivekananda College
of Science, Humanities and Commerce
Sainikpuri, Secunderabad-500094.



Bhavan's Vivekananda College

of Science, Humanities and Commerce

(Sainikpuri, Secunderbad, Telangana - 500094)

Autonomous College - Affiliated to Osmania University

Reaccredited with "A" grade by NAAC

Department of Management Studies

PROGRAM NAME: BBA Honors- Business Intelligence and Analytics

COURSE NAME: Optimization Techniques - Prescriptive Analytics

PAPER CODE: BBAH 684

PPW: 5

YEAR/SEMESTER: III/VI

NO. OF CREDITS: 5

Course Objectives:

- 1.To understand the importance of prescriptive analytics and its optimization techniques application in businesses
- 2.To know about basics of operations research and linear programming problems
- 3.To provide an understanding of simplex method of optimization techniques
- 4.To provide insights of transportation and assignment problems
- 5.To make the students know about CPM and PERT as project management techniques and their application

Unit 1: Prescriptive Analytics:

Prescriptive Analytics - Concept - Merits and Challenges - applications of prescriptive analytics - Overview of Linear Optimization, Non-Linear Programming, Integer Optimization, Cutting Plane algorithm, Decision Analysis (Risk and uncertainty methods)

(Signature)
Chairman

Board of Studies

Department of Management Studies
Bhavan's Vivekananda College
of Science, Humanities and Commerce
Sainikpuri, Secunderabad-500094.

Unit2: Introduction to Operations Research-Evolution of Operations Research. Nature, characteristics, managerial applications and limitations of Operations Research. Linear programming problem(LPP). Formulation of LPP (mathematical model), Assumptions underlying LPP. (problems)

Unit 3: Simplex method: LPP simplex method, Maximization and minimization cases(problems), optimality conditions, Degeneracy. Dual formulation, relationship between primal and dual, solutions of dual, economic interpretation of dual. (problems)

Unit 4: Transportation and Assignment problems: Transportation problem-mathematical model-IBFS using NWCR, LCEM, row minima, Column minima, VAM methods, optimal solution using U-V Method. Assignment problem, mathematical model, method of obtaining optimal solution by Hungarian method. (problems)

Unit 5: Project Management techniques: Network fundamentals, scheduling of activities, Fulkerson's rule-CPM, earliest& latest times, determination of critical path (problems. PERT-Beta distribution and probabilistic models, resource analysis and allocation(problems). PERT Vs CPM

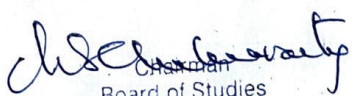
Course Outcomes:

At the end of the course students will be able to

1. Develop an understanding about importance of prescriptive analytics
2. Develop an idea of basics of operations research and linear programming problems
3. Familiarize about simplex method of optimization techniques
4. To solve transportation and assignment problems
5. Identify and understand about PERT and CPM as project management techniques

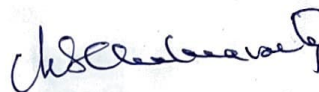
Suggested readings

1. Gerardus Blokdyk, Prescriptive Analytics, 5starcooks, 16 Jan 2018.
2. S.D.sharma, Operation Research, Edition, 2020 edition, Kedar Nath Ram Nath.
3. J.K Sharma, Quantitative Techniques for Managerial Decisions, Laxmi Publications, 2001 edition


Board of Studies
Department of Management Studies
Bhavan's Vivekananda College
of Science, Humanities and Commerce
Sainikpuri, Secunderabad-500094.

References

1. Gerardus Blokdyk, Prescriptive Analytics: A Clear and Concise Reference, 5STARCook, 2021
2. N.D. Vohra, Quantitative Techniques in Management, 5th Edition Paperback 2017



Chairman
Board of Studies
Department of Management Studies
Bhavan's Vivekananda College
of Science, Humanities and Commerce
Sainikpuri, Secunderabad-500094.



Bharatiya Vidya
Bhavan

Bhavan's Vivekananda College

of Science, Humanities and Commerce

(Sainikpuri, Secunderbad, Telangana - 500094)

Autonomous College - Affiliated to Osmania University

Reaccredited with "A" grade by NAAC

Department of Management Studies

PROGRAM NAME: BBA Honors- Business Intelligence and Analytics

COURSE NAME: Python Lab

COURSE CODE: BBA H 685

PPW: 2

YEAR/SEMESTER: III/VI

NO. OF CREDITS: 1

COURSE OBJECTIVE: To help students gain a foundational understanding of Python programming with emphasis on control structures, data types, and essential programming concepts.

UNIT-WISE COURSE OBJECTIVES:

COB1: Understand the basics of Python programming and learn to use control structures, strings and

functions.

COB2: Learn how to manipulate lists, tuples, dictionaries, files, pandas and data visualization.

Writing a program

1. That takes the user's name and age as input and prints a greeting message.
2. that accepts marks in five subjects and prints the total and average.
3. to determine whether a year is a leap year or not using if conditions.
4. to check whether a number is positive, negative, or zero using if-else.

Board of Studies
Department of Management Studies
Bhavan's Vivekananda College
of Science, Humanities and Commerce
Sainikpuri, Secunderabad-500094.

5. to print the multiplication table of a number using a for loop.
6. to print the first 10 natural numbers using a while loop.
7. to create a one-dimensional array and display its elements.
8. to compare two strings using comparison operators.
9. to remove all spaces from a string using `replace()` and `split()`.
10. to define a function that takes two numbers as arguments and returns their sum.
11. to demonstrate positional arguments in function calls.
12. to demonstrate keyword arguments in a function.
13. using list methods like `append()`, `insert()`, `pop()`, `remove()`, and `extend()`.
14. to use built-in functions like `len()`, `max()`, `min()`, and `sum()` on tuples.
15. to insert an element into a tuple by converting it to a list and back to a tuple.
16. to display all keys, values, and items in a dictionary.
17. to use dictionary methods like `get()`, `pop()`, `clear()`, `update()`, and `copy()`.
18. that uses try-except to handle division by zero.
19. to demonstrate multiple except blocks handling different exceptions.
20. to open a text file, write a message, and close it.
21. to read a file and display its contents.
22. to append data to an existing text file.
23. to create a DataFrame from a dictionary.
24. to read data from a CSV file using Pandas.
25. to read data from an Excel file using Pandas.
26. to generate a figure and axes using `plt.subplots()`.

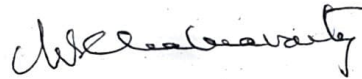
27. to change the line style, color, and markers in a plot.
28. to plot a scatter plot using `plt.scatter()`.
29. to create a bar plot using `plt.bar()`.
30. to create vertical bar charts and line charts.

COURSE OUTCOMES: At the end of the course students will be able to:

CO1: Apply Python basics, control structures, strings and functions to develop simple programs.

CO2: Use lists, tuples, dictionaries, files, pandas and data visualization to develop interactive

applications.



Chairman
Board of Studies
Department of Management Studies
Bhavan's Vivekananda College
of Science, Humanities and Commerce
Sainikpuri, Secunderabad-500094.