Janardan Bhagat Shikshan Prasarak Sanstha's

CHANGU KANA THAKUR
ARTS, COMMERCE & SCIENCE COLLEGE, NEW PANVEL (AUTONOMOUS)

Re-accredited 'A+' Grade by NAAC
'College with Potential for Excellence' Status Awarded by UGC
'Best College Award' by University of Mumbai

Department of Accounting & Finance

Board of Studies in Accounting & Finance

Program: Master of Commerce – Business Analytics

Syllabus of M.Com. Business Analytics Part - I
Choice Based Credit & Grading System (60:40)
w.e.f. Academic Year 2023-24

Sr. No.	Heading	Particulars
1	Title of Programme	M.Com. (Business Analytics)
2	Eligibility for Admission	Commerce and Science Graduate from any recognized University
3	Passing marks	40%
4	Ordinances/Regulations (if any)	---
5	No. of Semesters	Four
6	Level	P.G.
7	Pattern	Semester (60:40)
8	Status	Revised
9	To be implemented from Academic year	2023-2024

Programme - M.Com. (Business Analytics)
Preamble

The M.Com. (Business Analytics) programme is started with an aim to produce ethical business analytical post-graduates who have the academic and professional base of knowledge to meet the challenges posed by a dynamic global business environment through our teaching, service and research.

The main objectives of the Program are:

- To demonstrate the proficiency in data analysis methods and in data analytic tools.
- To learn and demonstrate practical knowledge of functional areas of business operation, Statistics & Econometrics
- To understand business applications, concept development and effective interpretation to solve business problems.
- To develop the ability to deal with numerical and quantitative problems in business.
- enhance the knowledge of the concept & query of Structured Query Language
- To define and identify the core areas of a business modelling & Financial Modelling by using different tools
- To equip the learners with theoretical and practical skills in Artificial Intelligence & Business Intelligence.
- To equip learners with financial analytics, HR Analytics, Marketing & supply chain Management
- To enhance the knowledge of cost & Management Accounting & also preparation of financial statements by adopting Indian Accounting Standard

Programme Outcomes

PO1-Disciplinary knowledge: Capable to demonstrate comprehensive knowledge of Accountancy, Commerce and Management.

PO2-Communication Skills: Develop ability to express thoughts and ideas effectively in writing and oral related to business Communication.

PO3-Critical thinking: Ability to recognize different value systems including your own, understand the moral dimensions of your decisions, and accept responsibility for them.

PO4-Problem solving: Ability to think rationally, analyze situations and solve problems adequately.

PO5- Research-related skills: Able to create a sense of inquiry and capability for asking relevant and appropriate questions related to Accountancy, Commerce and Management.

PO6- Cooperation/Team work: To work effectively and respectfully in different groups in the society and able to facilitate cooperative efforts as a member of a team.

PO7- Scientific reasoning: Ability to critically analyze, interpret data and draw conclusions with open mind in the field of Accountancy, Commerce and Management.

P08-Information/digital literacy: Ability to use ICT effectively to access, evaluate and analysis of data in the field of accountancy, commerce and management.

P09-Self-directed learning: Create ability to work independently for a project and manage a project through to completion in the field of accountancy, commerce and management.

PO10- Multicultural competence: Able to demonstrate commerce, management values and beliefs to the multiple cultural and global groups.

PO11- Social Interaction: Ability to elicit views of others, mediate disagreements and help reach conclusions in group setting.

Programme Specific Outcomes

Name of the Programme: M. Com. Business Analytics	**Programme Coordinator:** Dr. N. E. Koli	**Head of the Department:** Dr. N. E. Koli
	After completing the Programme in M. Com. Business Analytics, Student will able to:	
PSO1	Acquire conceptual, fundamental and application-based knowledge in Business Analytics, Data Science, Business Intelligence, Artificial Intelligence, Financial Modelling, Business Modelling, Financial analytics, HR and Marketing Analytics.	
PSO2	Apply data visualization tools for development of Business modelling & Financial Modelling.	
PSO3	Prepare, analyze, Evaluate and interpret financial statements as per Indian AS by applying critical thinking skills, analytical skills and problem-solving skills.	
PSO4	Analyze the Human Resources, Marketing & supply chain management model through big data and data mining techniques	

Choice Based Credit Grading and Semester System (CBCGS)
M.Com. (Business Analytics) Part – I Semester I & II Syllabus
To be implemented from the Academic year 2023-2024

Course Structure

M.Com. – Business Analytics Part - I

No. of Courses	Semester I	Credits	No. of Courses	Semester II	Credits
1	***Discipline Specific Course (Major)***		***1***	***Discipline Specific Course (Major)***	
1	Introduction to Business Analytics & Data Science	04	1	Business Application of Block Chain Technologies	04
2	Business Intelligence	04	2	Business Modelling	04
3	Statistics & Econometrics	04	3	Quantitative techniques for Managers	04
4	R Programming	02	4	Python Programming	02
2	***Discipline Specific Course (Minor)***		***2***	***Discipline Specific Course (Minor)***	
5	Research Methodology	04		---	
3	***Discipline Specific Course (Elective)***		***3***	***Discipline Specific Course (Elective)***	
6	Strategic Cost Accounting	04	5	Financial Reporting	02
4	***OJT/ FP/CEP/RP***		***4***	***OJT/ FP/CEP/RP***	
	---		6	On Job Training	04
	Total Credits	**22**		**Total Credits**	**22**

M.Com. – Business Analytics Part - II

No. of Courses	Semester III	Credits	No. of Courses	Semester IV	Credits
1	***Discipline Specific Course (Major)***		***1***	***Discipline Specific Course (Major)***	
1	Big Data Analytics	04	1	Financial & Credit Risk Analytics	04
2	Artificial Intelligence & Machine Learning	04	2	Marketing & Supply Chain Management Analytics	04
3	Financial Modelling	04	3	Data mining Techniques	04
4	Human Resource Analytics	02	4	Retail Analytics	02
2	***Discipline Specific Course (Elective)***		***2***	***Discipline Specific Course (Elective)***	
5	Taxation	04	5	Strategic Financial Management	04
3	***OJT/ FP/CEP/RP***		***3***	***OJT/ FP/CEP/RP***	
6	Research Project	04	6	Research Project	04
	Total Credits	**22**		**Total Credits**	**22**

Choice Based Credit Grading and Semester System (CBCGS)
M.Com. (Business Analytics) Part – I Semester I Syllabus
To be implemented from the Academic year 2023-2024

M.Com. – Business Analytics Part - I

Course Structure

No. of Courses		Semester I	Credits	L / Week
1		***Discipline Specific Course (Major)***		
1	PAF1BDS	Introduction to Business Analytics & Data Science	4	4
2	PAF1BIN	Business Intelligence	4	4
3	PAF1SAE	Statistics & Econometrics	4	4
4	PAF1RPG	R Programming	2	2
2		***Discipline Specific Course (Minor)***		
5	PAF1RMD	Research Methodology	4	4
3		***Discipline Specific Course (Elective)***		
6	PAF1SCA	Strategic Cost Accounting	4	4
		Total Credits	**22**	

Choice Based Credit Grading and Semester System (CBCGS)
M.Com. (Business Analytics) Part – I Semester I Syllabus
To be implemented from the Academic year 2023-2024

1. Introduction to Business Analytics & Data Science

1	Preamble of the syllabus
	M.Com.in Business Analytics is a post-graduate Programme of Department Accounting & Finance, Changu Kana Thakur Arts, Commerce & Science College, New Panvel. (Autonomous) affiliated to University of Mumbai (MH) The Choice Based Credit, Grading and Semester System to be implemented through this curriculum, would allow students to develop a strong footing in the fundamentals and specialize in the disciplines of his/her liking and abilities. The students pursuing this course would have to develop understanding of various aspects of the business analytics & data science. It helps to understand the Role of Business Analyst and Data Science in business, also make an application of Data Science for Project Life Cycle. The performance of the learners shall be evaluated into two components i.e., internal and external. The learner's Performance shall be assessed by Internal Assessment with 40 marks and external assessment with 60 marks.

2	Objectives of the course
•	To understand the Role of Business Analyst and Data Science in business.
•	To describe the basic concept of data management, data mining techniques and machine learning
•	To make a use the application of business analysis.
•	To make an application of Data Science for Project Life Cycle.

3	Outcomes of the course	Bloom Taxonomy
	The students will be able to	
•	Describe the basics of business analysis and Data Science	Remember
•	Interpret data management and handling and Data Science Project Life Cycle	Understand
•	Discuss the machine learning concept	Understand
•	Evaluate the data mining techniques	Evaluate

Choice Based Credit Grading and Semester System (CBCGS)
M.Com. (Business Analytics) Part – I Semester I Syllabus
To be implemented from the Academic year 2023-2024

1. Introduction to Business Analytics & Data Science

4. Modules at a Glance

S. N	Modules	No. of Lectures
1	Introduction	05
2	Data	10
3	Introduction to Data Mining	15
4	Introduction to Machine Learning	15
5	Application of Business Analysis	15
Total		**60**

5. Detailed Syllabus

S.N	Modules/ Units
1	**Introduction to Business Analytics**
	• Concept of business analytics • Historical Overview of data analysis • Data Scientist vs. Data Engineer vs. Business Analyst • Career in Business Analytics • Data science • Applications for data science • Data Scientists Roles and Responsibility
2	**Data**
	• Data Collection; Data Management; Big Data Management • Organization/sources of data; Importance of data quality • Dealing with missing or incomplete data • Data Visualization • Data Classification Data Science Project Life Cycle: Business Requirement • Data Acquisition; Data Preparation • Hypothesis and Modeling; Evaluation and Interpretation • Deployment; Operations; Optimization
3	**Introduction to Data Mining**
	• The origins of Data Mining • Data Mining Tasks • OLAP and Multidimensional data analysis • Basic concept of Association Analysis and Cluster Analysis
4	**Introduction to Machine Learning**
	• History and Evolution • AI Evolution • Statistics Vs Data Mining Vs Data Analytics Vs, Data Science ,Supervised Learning • Unsupervised Learning; Reinforcement Learning • Frameworks for building Machine Learning Systems.
5	**Application of Business Analysis**
	• Retail Analytics; Marketing Analytics • Financial Analytics • Healthcare Analytics • Supply Chain Analytics

6. References Books

Introduction to Business Analytics & Data Science
• *Introduction to Data Mining, Pang-Ning Tan, Michael Steinbach, Vipin Kumar, Pearson Education India.* • *An Introduction to Business Analytics, Ger Koole, Lulu.com, 2019* • *Business Analytics – U Dinesh Kumar*

Choice Based Credit Grading and Semester System (CBCGS)

M.Com. Business Analytics Part – I Semester I Syllabus

To be implemented from the Academic year 2023-2024

2. Business Intelligence

1	Preamble of the syllabus
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2	Objectives of the course
•	To identify the technological architecture that makes up BI systems.
•	To understand the concepts and components of Business Intelligence (BI)
•	To understand and use the technologies and tools that make up BI (e.g., Data warehousing, Data reporting and use of Online analytical processing (OLAP).
•	To evaluate use of BI for supporting decision making in an organization.

3	Outcomes of the course	Bloom Taxonomy
•	**The students will be able to:**	
•	Identify the decision-making capabilities in the business intelligence architecture and implement activities.	Apply
•	Categorize and assess consumer behavior and its influence on firm and household decisions.	Analyze
•	Evaluate the moral challenges involving best practices of ethical behavior.	Evaluate
•	Develop the data analysis framework for optimal performance.	Create

Choice Based Credit Grading and Semester System (CBCGS)

M.Com. Business Analytics Part – I Semester I Syllabus

To be implemented from the Academic year 2023-2024

2. Business Intelligence

4.Modules at a Glance

SN	Modules	No. of Lectures
1	Understanding Business Intelligence	10
2	Business Intelligence Technology Counterparts	15
3	Business Intelligence User Interfaces	15
4	On-Line Analytical Processing (OLAP)	15
5	Business Intelligence: The Future – Is it for you?	5
	Total	**60**

5.Detailed Syllabus

SN	Modules/ Units
1	**Understanding Business Intelligence**
	• The Challenge of Decision Making • Introduction to Business Intelligence • The Business Intelligence Value Proposition • The Combination of Business and Technology
2	**Business Intelligence Technology Counterparts**
	• Data Warehousing: What Is a Data Warehouse? Data Marts and Analytical Data, Organization of the Data Warehouse • Enterprise Resource Planning: Distributing the Enterprise, First ERP, then Business Intelligence, The Current State of Affairs • Customer Relationship Management: CRM, ERP, and Business Intelligence, Customer Decisions, Decisions About Customers • Business Intelligence and Financial Information
3	**Business Intelligence User Interfaces**
	• Querying and Reporting • Reporting and Querying Toolkits • Basic Approaches: Building Ad-Hoc Queries, Building On-Demand Self-Service Reports, Enhancing and Modifying • Data Access: Pull-Oriented Data Access, Push-Oriented Data Access • Dashboards: EIS Is the Engine, Metric System and KPIs, Business Intelligence Dashboards
4	**On-Line Analytical Processing (OLAP)**
	• OLAP? OLAP and OLTP, Operational Data Stores, Variations in Data and Approach • OLAP Applications and Functionality • Multi-Dimensions: Thinking in More Than Two Dimensions, What Are the Possibilities? Drilling and Pivoting • OLAP Architecture: Cubism, Tools, ROLAP, MOLAP, HOLAP • Data Mining: What Is in the Mine? Start with a Question, Examples
5	**Business Intelligence: The Future – Is it for you?**
	• Customizing Business Intelligence • The Business Intelligence Project Plan: Planning the Plan, Resources and Roles, Risk Management, Data Migration Issues • Human Factors: The Business Intelligence Technology Team. • "Could Be" as opposed to "Should Be" • Choosing the Right Size, Shape, and Cost, Architecture Alternatives, User-Oriented Architecture • Best Practices

6.Reference Books

Business Intelligence
• *Successful Business Intelligence, Mc Graw Hill Education, By Clindi Howson.* • *Business Intelligence: The Savvy Manager's Guide by David Loshin* • *Business Intelligence RoadMap, by Larissa T. Moss (Author), Shaku Atre (Author), Edward Yourdon* • *Business Intelligence Clinic by Roger F. Silva*

Choice Based Credit Grading and Semester System (CBCGS)

M.Com. (Business Analytics) Part – I Semester I Syllabus

To be implemented from the Academic year 2023-2024

3.Statistics & Econometrics

1	Preamble of the syllabus
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2	**Objectives of the course**
•	To describe the behavior of a forthcoming period that is forecasting economic phenomena.
•	To apply statistical methods and mathematics to economic data.
•	To evaluate relationships between economic variables through statistical techniques.
•	To develop in students the data analysis and interpretation skill with a theoretical background.

3	Outcomes of the course	Bloom Taxonomy
	The students will be able to	
•	Discuss the various concepts of Econometrics	Understand
•	Calculate probability distribution, Continuous Random Variables & Probability Distribution, Normal Distribution.	Apply
•	Analyze the variances by using ANOVA.	Analyse
•	Critically evaluate uses (and misuses) of statistics.	Evaluate

Choice Based Credit Grading and Semester System (CBCGS)

M.Com. (Business Analytics) Part – I Semester I Syllabus

To be implemented from the Academic year 2023-2024

3.Statistics & Econometrics

4.Modules at a Glance

S. N	Modules	No. of Lectures
1	Introduction	15
2	Probability Distribution & Statistical Inference	15
3	Statistical Methods – I	15
4	Statistical Methods – II	15
	Total	**60**

5.Detailed Syllabus

SN	Modules/ Units
1	**Introduction**
	• Introduction to Statistics • Introduction to Econometrics • Organization & Presentation of Data. Summarizing Date through Descriptive Statistics
2	**Probability Distribution & Statistical Inference**
	• Variables: Discrete Random Variable • Distribution: Probability Distribution, Continuous Random Variables & Probability Distribution, Normal Distribution • Statistical Inference: Introduction, Estimation & Hypothesis Testing, Relationship between Qualitative and Quantitative Variables
3	**Statistical Techniques I**
	• Variance: Variance and its analysis, One-way ANOVA, Two-way ANOVA, Analysis of Covariance • Index Numbers, Classical Time series Analysis • Linear Regression
4	**Statistical Methods II**
	• Hypothesis testing with CNLRM, Violation of CLRM Assumptions, Time series Regression with Stationary Data and Non-Stationary Data • Binary independent variable and limited dependent variable models • Simultaneous Equations Model and Panel Data & Program Evaluation Technique

6.Reference Books

Statistics & Econometrics
• *Introduction to Statistics and Econometrics - Takeshi Amemiya* • *A guide to basic econometrics techniques – Elia Kacapyr* • *A practical guide to using econometrics – A. H. studenmund* • *Probability, Statistics and Econometrics – oliver linton*

Choice Based Credit Grading and Semester System (CBCGS)

M.Com. (Business Analytics) Part – I Semester I Syllabus

To be implemented from the Academic year 2023-2024

4. R Programming

1	Preamble of the syllabus
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2	Objectives of the Course
•	To study basics of statistical computing and data analysis
•	To understand use of R analytical programming
•	To implement R programming in statistics
•	To design and write efficient programs using R to perform routine and specialized data manipulation and analysis tasks

3	Outcomes of the Course	Bloom Taxonomy
	The students will be able to:	
•	Define basics of statistical computing and data analysis	Remember
•	Apply R programming in statistics	Apply
•	Analyze use of R analytical programming	Analyze
•	Design and write efficient programs using R to perform routine and specialized data management and analysis tasks	Create

Choice Based Credit Grading and Semester System (CBCGS)

M.Com. (Business Analytics) Part – I Semester I Syllabus

To be implemented from the Academic year 2023-2024

4. R Programming

4.Modules at a Glance

SN	Modules	No. of Lectures
1	Introduction	08
2	Data Visualization using R	12
3	Statistics with R	10
	Total	**30**

5.Detailed Syllabus

SN	Modules/ Units
1	**Introduction**
	• Overview of R programming, Environment setup with R Studio, R Commands, Variables and Data Types, Control Structures, Array, Matrix, Vectors, Factors, Functions, R packages.
2	**Data Visualization using R**
	• Reading and getting data into R (External Data): Using CSV files, XML files, Web Data, JSON files, Databases, Excel files. Working with R Charts and Graphs: Histograms, Boxplots, Bar Charts, Line Graphs, Scatterplots, Pie Charts
3	**Statistics with R & Prescriptive Analytics**
	• **Statistics with R:** Random Forest, Decision Tree, Normal and Binomial distributions, Time Series Analysis, Linear and Multiple Regression, Logistic Regression, Statistics with R • **Prescriptive Analytics:** Creating data for analytics through designed experiments, creating data for analytics through active learning, Creating data for analytics through reinforcement learning

6.References Books

R Programming

1. *Jared P Lander, R for everyone: advanced analytics and graphics, Pearson Education*
2. *Dunlop, Dorothy D., and Ajit C. Tamhane. Statistics and data analysis: from elementary to intermediate. Prentice Hall*
3. *G Casella and R.L. Berger, Statistical Inference, Thomson Learning*
4. *P. Dalgaard. Introductory Statistics with R*

Choice Based Credit Grading and Semester System (CBCGS)

M.Com. (Business Analytics) Part – I Semester I Syllabus

To be implemented from the Academic year 2023-2024

5.Research Methodology

1	Preamble of the syllabus
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2	Objectives
•	To enhance the abilities of learners to undertake research in business & social sciences
•	To enable the learners to understand, develop and apply the fundamental skills in formulating research problems
•	To enable the learners in understanding and developing the most appropriate methodology for their research
•	To make the learners familiar with the basic statistical tools and techniques applicable for research

3	Course Outcomes	Bloom Taxonomy
	Students will able to:	
•	Describe various aspects of research methodology	Remember
•	Design the research in research methodology in accounting and finance	Create
•	Analyze the data collected & process for drawing conclusion	Analyse
•	Apply various statistical tools in research	Apply
•	Develop research report writing skill	Create

Choice Based Credit Grading and Semester System (CBCGS)

M.Com. (Business Analytics) Part – I Semester I Syllabus

To be implemented from the Academic year 2023-2024

5.Research Methodology

4.Modules at a Glance

SN	Modules	No. of Lectures
1	Introduction to Research	15
2	Research Process	15
3	Data Processing and Statistical Analysis	15
4	Research Reporting and Modern Practices in Research	15
	Total	**60**

5.Detailed Syllabus

SN	Modules/ Units
1	**Introduction to Research**
	• Features and Importance of research in business, Objectives and Types of research- Basic, Applied, Descriptive, Analytical and Empirical Research. • Formulation of research problem, Research Design, significance of Review of Literature • Hypothesis: Formulation, Sources, Importance and Types • Sampling: Significance, Methods, Factors determining sample size
2	**Research Process**
	• Stages in Research process • Data Collection: Primary data: Observation, Experimentation, Interview, Schedules, Survey, • Limitations of Primary data • Secondary data: Sources and Limitations, • Factors affecting the choice of method of data collection. • Questionnaire: Types, Steps in Questionnaire Designing, Essentials of a good questionnaire
3	**Data Processing and Statistical Analysis**
	• Data Processing: Significance in Research, Stages in Data Processing: Editing, Coding, Classification, Tabulation, Graphic Presentation • Statistical Analysis: Tools and Techniques, Measures of Central Tendency, Measures of Dispersion, Correlation Analysis and Regression Analysis, Probability • Testing of Hypotheses – ▪ Parametric Test-t test, f test, z test ▪ Non-Parametric Test -Chi square test, ANOVA, Factor Analysis • Interpretation of data: significance and Precautions in data interpretation
4	**Research Reporting and Modern Practices in Research**
	• Research Report Writing: Importance, Essentials, Structure/ layout, Types • References and Citation Methods: ▪ APA (American Psychological Association) ▪ CMS (Chicago Manual Style) ▪ MLA (Modern Language Association) • Footnotes and Bibliography • Modern Practices: Ethical Norms in Research, Plagiarism, Role of Computers in Research

6. References Books

Cost & Management Accounting
• *Research Met**h**od**o**logy, Methods & Techniques, C R Kothari* • *Research Methods in Accounting, Malcolm Smith* • *Research Methods and Methodology in Finance and Accounting, by Viv Beattie and Bob Ryan* • *Research Met**h**od**o**logy, Techniques and Methods, S. K. Acharya*

Choice Based Credit Grading and Semester System (CBCGS)

M.Com. (Business Analytics) Part – I Semester I Syllabus

To be implemented from the Academic year 2023-2024

6.Straegic Cost Accounting

1	Preamble of the syllabus
	M.Com. in Business Analytics is a post-graduate Programme of Department Accounting & Finance, Changu Kana Thakur Arts, Commerce & Science College, New Panvel. (Autonomous) affiliated to University of Mumbai (MH) The Choice Based Credit, Grading and Semester System to be implemented through this curriculum, would allow students to develop a strong footing in the fundamentals and specialize in the disciplines of his/her liking and abilities. The students pursuing this course would have to develop understanding of various aspects of the Cost & Management Accounting. It helps to enhance the abilities of learners to develop the concept of Black flush Accounting, Pareto Analysis, and Throughput Accounting & Balance sheet scorecard, also to accumulate, allocate and ascertain cost of the product by applying marginal costing techniques. The performance of the learners shall be evaluated into two components i.e., internal and external. The learner's Performance shall be assessed by Internal Assessment with 40 marks and external assessment with 60 marks.

2	Objectives of the Course
•	To enhance the abilities of learners to develop the concept of Black flush Accounting, Pareto Analysis, Throughput Accounting & Balance sheet scorecard
•	To accumulate, allocate and ascertain cost of the product by applying marginal costing techniques and cost control through standard costing.
•	To enable learners to use proactive cost planning, cost management, and cost reduction practices where costs are planned and calculated early in the design and development cycle.
•	To identify the benefits, and essentials of success of measuring and reporting of costs by managerial levels of responsibility.

3	Outcomes of the Course	Bloom Taxonomy
	The students will be able to:	
•	Apply cost accounting methods to evaluate and project business performance.	Apply
•	Classify the cost of product, apportionment of cost of product.	Analyse
•	Calculate total cost of the product for fixing selling price.	Apply
•	Determine the target cost.	Evaluating

Choice Based Credit Grading and Semester System (CBCGS)

M.Com. (Business Analytics) Part – I Semester I Syllabus

To be implemented from the Academic year 2023-2024

6.Straegic Cost Accounting

4.Modules at a Glance

S. N	Modules	No. of Lectures
1	Marginal costing techniques	10
2	Cost Control through Standard Costing	10
3	Target Costing	10
4	Responsibility Accounting & Divisional Profitability	12
5	Backflush Accounting & Resources Consumption Accounting	08
6	Pareto analysis, Throughput Accounting & Balanced Score card	10
	Total	**60**

5.Detailed Syllabus

S. N	Modules/ Units
1	**Marginal costing techniques**
	• Marginal Cost & marginal Costing; Absorption Costing; Contribution & profit • Impact on profit of Absorption costing and marginal costing, • Hypothetical statements of cost & profit, Practical Applications of marginal costing technique • Breakeven Analysis; Cash Breakeven and indifference analysis • Profit/Volume ratio; Margin of safety, Angle of incidence, • Relationship among BEP; MOS & AOI; Impact of selling price • Fixed cost and variable cost & Cost – Volume – Profit Analysis.
2	**Cost Control through Standard Costing**
	• Calculate advanced variances • Interpret Identify the relationship of variances • Standard costing method incl. Reconciliation of Budgeted and Actual Profit, • Issues involved in changing mix i.e., cost, quality & Performance measurement issues and Variance analysis to assess future performance.
3	**Target Costing**
	• Concept and Benefits of Target costing, • Steps in Target costing, Target cost management and methodology, • Methods of establishment of target cost & ascertainment of total target cost.
4	**Responsibility Accounting & Divisional Profitability**
	• Responsibility Accounting – Meaning, Features, Objective, Assumptions, Problems, Responsibility Centre's – Cost, Profit, Revenue and Investment. • Concept of Controllability – Introduction, Measuring Managerial Performance, Preparation of Managerial Reports using Segmented Costs and Controllable costs approach • Divisional Income Statement & Divisional Profitability under ROCE Method & Residual Income Method
5	**Backflush Accounting & Resources Consumption Accounting**
	• Benefits, Problems, variants & inventory valuation of Backflush Accounting, Meaning, Advantages, Difficulties & Methodology in implementation of RCA
6	**Pareto analysis, Throughput Accounting & Balanced Score card**
	• Meaning, usefulness& practical applications of Pareto Analysis, Concepts, Meaning & Problems in Throughput Accounting, • Distinction between Product costing & throughput Accounting Bottlenecks and overhead accounting Meaning, benefits, Limitations, Perspectives & stages in developing Balanced Score card (BSC) Performance measures BSC and improvement of strategic Performance

6. References Books

Cost & Management Accounting
• *Taxman's CRAKER for Cost & Management Accounting – ICAI Intermediate* • *Cost and Management Accounting, oxford by J.K Mitra* • *Cost and Management Accounting, Ravi M. Kishor* • *Cost Management by Saxena & Vashist* • *Cost & Management Accounting by Ravi N.Kishor ,Publication Taxmonth* • *Essential of Management Accounting by P.N.Reddy,Himalaye* • *Advanced Management Accounting by Robert S Kailar,Holl* • *Financial Of Management Accounting by S.R.Varshney,Wisdom* • *Introduction Of Management Accounting by Charbs T Horngram, PHI Learnng* • *Management Accounting by I.m.Pandey, Vikas* • *Cost & Management Accounting by D.K.Mattal,Galgotia* • *Management Accounting by Khan & Jain,Tata Megaw* • *Management Accounting by R.P.Resstogi*

Choice Based Credit Grading and Semester System (CBCGS)

M.Com. (Business Analytics) Part – I Semester II Syllabus

To be implemented from the Academic year 2023-2024

Semester II

No. of Courses		Semester II	Credits	L / Week
1		***Discipline Specific Course (Major)***		
1	PAF2BCT	Business Application of Block Chain Technologies	4	4
2	PAF2BMT	Business Modelling	4	4
3	PAF2QTM	Quantitative techniques for Managers	4	4
4	PAF2RPG	Python Programming	2	2
2		***Discipline Specific Course (Elective)***		
5	PAF2FRP	Financial Reporting	4	4
3				
6	PAF2OJT	On Job Training	4	4
		Total Credits	**22**	

Choice Based Credit Grading and Semester System (CBCGS)

M.Com. (Business Analytics) Part – I Semester II Syllabus

To be implemented from the Academic year 2023-2024

1.Business Application of Block Chain Technologies

1	Preamble of the syllabus
	M.Com. in Business Analytics is a post-graduate Programme of Department Accounting & Finance, Changu Kana Thakur Arts, Commerce & Science College, New Panvel. (Autonomous) affiliated to University of Mumbai (MH) The Choice Based Credit, Grading and Semester System to be implemented through this curriculum, would allow students to develop a strong footing in the fundamentals and specialize in the disciplines of his/her liking and abilities. The students pursuing this course would have to develop understanding of various aspects of business application of block chain technologies. It helps to understanding Blockchain and its significance, also understand cryptography and Blockchain networks. The performance of the learners shall be evaluated into two components i.e., internal and external. The learner's Performance shall be assessed by Internal Assessment with 40 marks and external assessment with 60 marks.

2	Objectives of the course
•	To understand Blockchain and its significance
•	To determine cryptography and Blockchain networks
•	To describe Business challenges
•	To understand domain specific Blockchain business cases
•	To understand crypto economy and decentralized Internet

3	Outcomes of the course	Bloom Taxonomy
•	To describe Blockchain technology and its significance.	Remember
•	To explain cryptography and Blockchain technology networks.	Understand
•	To identify Business challenges in Blockchain technology.	Apply
•	To evaluate the domain specific Blockchain technology business cases.	Evaluate

Choice Based Credit Grading and Semester System (CBCGS)

M.Com. (Business Analytics) Part – I Semester II Syllabus

To be implemented from the Academic year 2023-2024

1.Business Application of Block Chain Technologies

4.Modules at a Glance

S.N	Modules	No. of Lectures
1	Introduction	05
2	Benefits and Trust Layer	10
3	Block chain Framework	15
4	Block chain Business Case	15
5	Block chain Architecture	15
	Total	**60**

5.Detailed Syllabus

S.N	Modules/ Units
1	**Introduction**
	What is Blockchain, Game Theory and Cryptography, Block chain vs Traditional architecture, Database Vs. Ledger, State Transitions and State Machines, The Consensus Algorithms, Software.
2	**Benefits and Trust Layer**
	A new Trust Layer, Decentralization of Trust, A spectrum of Trust Services, The Block chain Landscape, Benefits and Indirect benefits, Trusted Block chain enabling services, Identify ownership and representation, Decentralized data security, Block chain as Cloud.
3	**Block chain Framework**
	Block chain with a Framework approach, Technical Challenges, Business Challenges, Legal Barriers, Behavioral/ Educational Challenges. Public, Private, and Consortium Block chain networks, Block chain pitfalls, Distinctions and Considerations of Resource and Control. Comparative Study and Use case: Ethereum
4	**Block chain Business Case**
	Block chain domain specific Business Case – Supply chain, financial markets, Healthcare & Transportation, BFSI, Insurance, Digital Marketing.
5	**Blockchain Architecture**
	Internal Strategies for tackling the Blockchain, The Blockchain Czar, Organizational Model, A Blockchain Functional Architecture, Core & Protocol, Decision Making Framework. Decentralized internet, The crypto Economy.

6. References Books

Business Application of Block Chain Technologies
1."Mastering Bitcoin: Unlocking digital cryptocurrencies", by Andreas M. Antonopoulos *2."Blockchain: Blueprint for a New Economy", by Melanie Swan* *3."Ethereum: Blockchains, Digital Assets, Smart Contracts, Decentralized Autonomous Organizations", by Henning Diedrich*

Choice Based Credit Grading and Semester System (CBCGS)

M.Com. (Business Analytics) Part – I Semester II Syllabus

To be implemented from the Academic year 2023-2024

2.Business Modelling

1	Preamble of the syllabus
	M.Com. in Business Analytics is a post-graduate Programme of Department Accounting & Finance, Changu Kana Thakur Arts, Commerce & Science College, New Panvel. (Autonomous) affiliated to University of Mumbai (MH) The Choice Based Credit, Grading and Semester System to be implemented through this curriculum, would allow students to develop a strong footing in the fundamentals and specialize in the disciplines of his/her liking and abilities. The students pursuing this course would have to develop understanding of various aspects of business modelling. It helps to understand the Power BI Techniques and tools like DAX, Data Visualizations, Q&A and Data Insights, Report Server, also Work through numerous examples of linear and integer programming, as well as Monte Carlo simulation, decision analysis, and queuing theory. The performance of the learners shall be evaluated into two components i.e., internal and external. The learner's Performance shall be assessed by Internal Assessment with 40 marks and external assessment with 60 marks.

2	Objectives of the course
•	To understand fundamental of Visual Basic to be able to create front-end and back-end applications.
•	To learn the work through numerous examples of linear and integer programming, as well as Monte Carlo simulation, and decision analysis.
•	To know how to extract data from various sources and establish connections with Power BI Desktop & Query Editor, perform transformation operations on data.
•	To evaluate the Power BI Techniques and tools like DAX, Data Visualizations, Q&A and Data Insights, Report Server.

3	Outcomes of the course	Bloom Taxonomy
	The students will be able to:	
•	Describe the basic of VB and Excel	Remember
•	Explain the Power BI and its use	Understand
•	Analyze the Power BI techniques	Analyze
•	Design an application of spreadsheet in the modelling	Create

M.Com. (Business Analytics) Part – I Semester II Syllabus

To be implemented from the Academic year 2023-2024

2.Business Modelling

4.Modules at a Glance

S.N	Modules	No. of Lectures
1	Introduction to VB & EXCEL	15
2	Modeling through spreadsheet	15
3	Introduction to Power BI	15
4	Application of Power BI Technique	15
	Total	**60**

5. Detailed Syllabus

SN	Modules/ Units
1	**Introduction to VB & EXCEL**
	• Headers/Footers, Cell Comments, Worksheet Protection, Writing Macros, Drop- Down Lists, Form Controls, • Error Checking, and Conditional Formatting, VBA Programming in Excel for Decision Support Systems • Applications include investment problem, inventory problem
2	**Modeling through spreadsheet**
	• Excel modeling tools, Waiting Lines and Queuing Theory, Monte Carlo Simulation, Queuing Theory • Optimization with Excel Solver Problem formulation, use of solver, Sensitivity analysis • Weibull and Beta Distributions: Modeling Machine Life and Duration of a Project, • Pricing Products by Using Tie-Ins with an exercise • Using the Lognormal Random Variable to Model Stock Prices, The Economic Order Quantity Inventory Model, Inventory Modeling with Uncertain Demand.
3	**Introduction to Power BI**
	• Business Intelligence, SSBI (Self Service Business Intelligence tools) • Power BI, Architecture of Power BI, Components of Power BI
4	**Application of Power BI Technique**
	• Power BI Desktop: Overview of Power BI Desktop, Data sources and connections in Power BI (Various different DS connections), Query editor in Power BI, transform data in Query editor Joining data, Data interpretations, manage data relationship, change data source connectivity Create calculated measures and filter at data level, Modeling data • Data Analysis Expressions (DAX): Why DAX, DAX Syntax, Data types in DAX, Types of calculations, DAX tables and Filtering, DAX queries, DAX Parameters, Analytics calculations • Power BI Q&A and Data Insights: Introduction to Power BI Services, Dashboard vs. Reports, Quick Insights, Creating Dashboards, Power BI Q&A, Ask Questions of your Data, Power BI Embedded • Power BI Report Server: Report server Basics, Web Portal, Row level security, Data Gateways, Scheduled data refresh

6.References Books

Business Modelling
• *Mastering Microsoft Power BI: Expert Techniques for Effective Data Analytics and Business Intelligence - Brett Powell* • *The Definitive Guide to DAX: Business Intelligence with Microsoft Excel, SQL Server Analysis Services, and Power BI - by Alberto Ferrari and Marco Russo* • *Business Modeling with Spreadsheets: Problems, Principles and Practice - Thin-Yin LEONG & Michelle L.F. CHEONG* • *Microsoft Excel VBA and Macros (Office 2021 and Microsoft 365) (Business Skills) - Bill Jelen & Tracy Syrstad*

Choice Based Credit Grading and Semester System (CBCGS)

M.Com. (Business Analytics) Part – I Semester II Syllabus

To be implemented from the Academic year 2023-2024

3. Quantitative Techniques for Managers

1	Preamble of the syllabus
	M.Com. in Business Analytics is a post-graduate Programme of Department Accounting & Finance, Changu Kana Thakur Arts, Commerce & Science College, New Panvel. (Autonomous) affiliated to University of Mumbai (MH) The Choice Based Credit, Grading and Semester System to be implemented through this curriculum, would allow students to develop a strong footing in the fundamentals and specialize in the disciplines of his/her liking and abilities. The students pursuing this course would have to develop understanding of various aspects of quantitative techniques for managers. It helps to Understand the importance of the use of OR application in decision Making environment, also formulate LPP and Obtain Graphical Solutions & Acquire General idea of the Simplex method. The performance of the learners shall be evaluated into two components i.e., internal and external. The learner's Performance shall be assessed by Internal Assessment with 40 marks and external assessment with 60 marks.

2	Objectives of the course
•	To understand the importance of the use of OR application in decision Making environment.
•	To formulate LPP and Obtain Graphical Solutions & Acquire General idea of the Simplex method.
•	To solve transportation & assignment models.
•	To know optimal sequence model and understand concepts of queuing theory.

3	Outcomes of the course	Bloom Taxonomy
	The students will be able to:	
•	Evaluate different types of decision-making environments and the appropriate decision-making approaches and tools	Evaluate
•	Construct linear programming problem and to find optimal CO2: solution by graphical simplex method.	Create
•	Solve Transportation Models and Assignment Models also to solve game theory problems by understanding pure and mix strategies.	Apply
•	Describe optimal sequence of difference jobs on different machines and queuing theory concepts and CPM, PERT to reduce cost and time.	Understand

Choice Based Credit Grading and Semester System (CBCGS)

M.Com. (Business Analytics) Part – I Semester II Syllabus

To be implemented from the Academic year 2023-2024

3. Quantitative Techniques for Managers

4.Modules at a Glance

SN	Modules	No. of Lectures
1	Operations Research & Decision-Making Environments	15
2	Linear Programming Problem & Transportation Problem	15
3	Assignment model & Game Theory, Sequencing & Queuing Theory	15
4	Replacement Problem & Project Management	15
	Total	**60**

5.Detailed Syllabus

SN	Modules/ Units
1	**Operations Research & Decision-Making Environments**
	• Uses, Scope and Applications of Operation Research in managerial decision-making. • Decision-making environments: - Decision-making under certainty, uncertainty and risk situations; Decision tree approach and its applications.
2	**Linear Programming Problem & Transportation Problem**
	• Linear programming: Mathematical formulations of LP Models for product-mix problems; graphical and simplex method of solving LP problems; duality. • Transportation problem: Various methods of finding Initial basic feasible solution-North West Corner Method, Least Cost Method & VAM Method and optimal solution-Stepping Stone & MODI Method, Maximization Transportation Problem
3	**Assignment model & Game Theory, Sequencing & Queuing Theory**
	• Assignment model: Hungarian Algorithm and its applications, Maximization Assignment Problem. • Game Theory: Concept of game; Two-person zero-sum game; Pure and Mixed Strategy Games; Saddle Point; Odds Method; Dominance Method and Graphical Method for solving Mixed Strategy Game. • Sequencing Problem: Johnsons Algorithm for n Jobs and Two machines, n Jobs and Three Machines, Two jobs and m - Machines Problems. • Queuing Theory: Characteristics of M/M/I Queue model; Application of Poisson and Exponential distribution in estimating arrival rate and service rate; Applications of Queue model for better service to the customers.
4	**Replacement Problem & Project Management**
	• Replacement Problem: Replacement of assets that deteriorate with time, replacement of assets which fail suddenly. • Project Management: Rules for drawing the network diagram, Applications of CPM and PERT techniques in Project planning and control; crashing of operations.

6.References Books

Quantitative Techniques for Managers
• *R. Panneerselvam - Operations Research (PHI, 2nd Edition)* • *Sharma J K - Operations Research (Pearson, 3rd Edition* • *Apte-Operation Research and Quantitative Techniques (Excel Books)* • *Vohra - Quantitative Techniques in Management (Tata McGraw-Hill, 2nd)*

Choice Based Credit Grading and Semester System (CBCGS)

M.Com. (Business Analytics) Part – I Semester II Syllabus

To be implemented from the Academic year 2023-2024

4.Python Programming

1	Preamble of the syllabus
	M.Com.in Business Analytics is a post-graduate Programme of Department Accounting & Finance, Changu Kana Thakur Arts, Commerce & Science College, New Panvel. (Autonomous) affiliated to University of Mumbai (MH) The Choice Based Credit, Grading and Semester System to be implemented through this curriculum, would allow students to develop a strong footing in the fundamentals and specialize in the disciplines of his/her liking and abilities. The students pursuing this course will get knowledge of why Python is a useful scripting language for developers as well as Applications. Also, learn how to write loops and functions in Python as well as determine how to use lists, tuples, and Range in Python programs. learners can apply and develop different python packages for mathematical, scientific applications, the model for data analysis and evaluate the model performance and for web data analysis. The performance of the learners shall be evaluated into two components i.e., internal and external. The learner's Performance shall be assessed by Internal Assessment with 40 marks and external assessment with 60 marks.

2	Objectives of the course
•	To understand why Python is a useful scripting language for developers as well as Applications.
•	To learn how to write loops, functions, in Python.
•	To learn how to write lists, tuples, and Range.
•	To apply and develop different python packages for mathematical, scientific applications, the model for data analysis and evaluate the model performance and for web data analysis.

3	Outcomes of the course	Bloom Taxonomy
	The students will be able to:	
•	Explain significance of Python language for developers.	Understand
•	Make use of loops, functions, lists, tuples, and Range in Python programs.	Apply
•	Analyze the different ways of data analysis with the help of Python application.	Analyze

Choice Based Credit Grading and Semester System (CBCGS)

M.Com. (Business Analytics) Part – I Semester II Syllabus

To be implemented from the Academic year 2023-2024

4.Python Programming

4.Modules at a Glance

SN	Modules	No. of Lectures
1	Introduction	06
2	Conditionals, Loops and Functions.	10
3	List, Ranges & Tuples in Python	04
5	Python For Data Analysis	10
	Total	**30**

5.Detailed Syllabus

	Modules/ Units
1	**Introduction**
	• Introduction, history of Python, Comparison of Python with other languages (C/C++, Java), Salient features of Python, How Python runs Programs? Areas where Python is in use, Industries that are using Python, Install Python and Environment Setup, Identifiers, Keywords and Indentation Comments in Python, Command line arguments, Getting User Input, Python Data Types, what are variables? Python Core objects and Functions
2	**Conditionals, Loops and Functions**
	• Conditionals and Loops: if statement, else Statement, elif Statement, while Statement, for Statement break Statement, continue Statement, pass Statement. Functions: Built-in Functions, User defined functions: Defining a Function, Calling a Function, Various Function Arguments.
3	**List, Ranges & Tuples in Python**
	• Introduction Lists in Python, Understanding Iterators, Generators, Comprehensions and Lambda Expressions, Introduction Generators and Yield Next and Ranges, Understanding and using Ranges, Ordered Sets with tuples
4	**Python For Data Analysis**
	• NumPy: Introduction to NumPy, creating arrays, using arrays and Scalars, Indexing Arrays, Array Transposition, Universal Array Function, Array Processing, Array Input and Output3 • Pandas: What are pandas? Where it is used? Series in pandas, Index objects, Reindex, Drop Entry, Selecting Entries, Data Alignment, Rank and Sort, Summary Statics, Missing Data, Index Hierarchy

6.References Books

Python Programming
1. *Python: The Complete Reference - McGraw Hill Education.* 2. *Python for Data Analysis: Data Wrangling with Pandas, NumPy, and Python, 2nd Edition - Shroff/O'Reilly* 3. *Data Analytics using Python - Wiley* 4. *Learning With Python - Dreamtech Press* 5. *Python Programming Using Problem Solving Approach 2Nd Edition by Reema Thareja, Oxford India*

Choice Based Credit Grading and Semester System (CBCGS)

M.Com. (Business Analytics) Part – I Semester II Syllabus

To be implemented from the Academic year 2023-2024

5.Financial Reporting

1	Preamble of the syllabus
	M.Com. in Business Analytics is a post-graduate Programme of Department of Accounting & Finance, Changu Kana Thakur Arts, Commerce & Science College, New Panvel (Autonomous). Affiliated to University of Mumbai (MH) The Choice Based Credit, Grading and Semester System to be implemented through this curriculum, would allow students to develop a strong footing in the fundamentals and specialize in the disciplines of his/her liking and abilities. The students pursuing this course would have to develop understanding of various aspects of the Accounting & Finance. It helps to improve the Regularity, consistency, materiality and comparability of the communication of financial information with the help of GAAP as well as to evaluate different accounting policies and their impact on financial statements as per Ind AS. The performance of the learners shall be evaluated into two components i.e., internal and external. The learner's Performance shall be assessed by Internal Assessment with 40 marks and external assessment with 60 marks.

2	Objectives of the course
•	To improve the Regularity, consistency, materiality and comparability of the communication of financial information with the help of GAAP.
•	To evaluate different accounting policies and their impact on financial statements as per Ind AS.
•	To understand, interpret and analyze general purpose financial reports.
•	To provide the knowledge with an overview of the 'principle-based' Ind AS Reporting Framework.

3	Outcomes of the course	Bloom Taxonomy
	The students will be able to:	
•	Describe and understand the International Financial Reporting standards and their application.	Understand
•	Prepare and interpret the financial statements according to the Ind AS.	Create
•	Develop understanding the concept of GAAP, IFRS and Ind AS.	Apply
•	Distinguish the scheme of Merger, demerger and Reverse Acquisition.	Analyse

Choice Based Credit Grading and Semester System (CBCGS)

M.Com. (Business Analytics) Part – I Semester II Syllabus

To be implemented from the Academic year 2023-2024

5.Financial Reporting

4.Modules at a Glance

S. N	Modules	No. of Lectures
1	Conceptual Framework for GAAP and Accounting Standards	10
2	Accounting of Business Combinations and Restructuring	10
3	Ind AS on Presentation of General-Purpose Financial Statements	15
4	Ind AS on Assets of the Financial Statements	15
5	Ind AS on Liabilities of the Financial Statements	10
	Total	**60**

5. Detailed Syllabus

SN	Modules/ Units
1	**Conceptual Framework for GAAP and Accounting Standards**
	• Generally Accepted Accounting Principles in India • Overview of Accounting Standards • International Financial Reporting Standards • Applicability of Indian Accounting Standards
2	**Accounting of Business Combinations and Restructuring**
	• Introduction • Types of Mergers • Concept of Business Combination • Ind AS: 103 Business Combination • Scheme of Reconstruction • Business Combination under Common Control • Demerger – Concept • Reverse Acquisition
3	**Ind AS on Presentation of General-Purpose Financial Statements**
	• Ind AS 1: Presentation of Financial Statements • Ind AS 34: Interim Financial Reporting • Ind AS 7: Statement of Cash Flows
4	**Ind AS on Assets of the Financial Statements**
	• Ind AS 2: Inventories • Ind AS 16: Property, Plant and Equipment • Ind AS 116: Leases • Ind AS 23: Borrowing Costs • Ind AS 36: Impairment of Assets • Ind AS 38: Intangible Assets
5	**Ind AS on Liabilities of the Financial Statements**
	• Ind AS 19: Employee Benefits • Ind AS 37: Provisions, Contingent Liabilities and Contingent Assets

6. Reference Books

Financial Reporting
1. *Financial Reporting - MP Vijay Kumar* 2. *Financial Reporting - D.S. Rawat* 3. *Financial Reporting - Pankaj Garg* 4. *Corporate Financial Reporting - Praveen Sharma*

Choice Based Credit Grading and Semester System (CBCGS)

M.Com. Business Analytics - Part I Semester –I & II

To be implemented from the Academic year 2023-24

Scheme of Evaluation

Scheme of examination for each semester

The performance of the learners shall be evaluated into two components. The learner's Performance shall be assessed by Internal Assessment with 40% marks in the first component. External assessment with 60% marks in the second component. The allocation of marks for the Internal Assessment and Semester End Examinations are as shown below: -

A) Internal Assessment: 40 % 40 Marks

Internal Assessment- (Courses without Practical Courses)

Sr. No.	Particular	Marks
01	One periodical class test / online examination to be conducted in the given semester	20 Marks
02	Group / Individual Survey Project / Presentation and write up on the selected topics of the subjects / Case Studies / Test based on tutorials / Book Review / Poetry Appreciation / Open Book Test	15 Marks
03	Active Participation in routine class instructional deliveries and overall conduct as a responsible learner, mannerism and articulation and exhibit of leadership qualities in organizing related academic activities.	05 Marks
	Total Marks	**40 Marks**

(For Courses with Practical)

Sr. No.	Particular		Marks
01	**Practical Examination**		20 Marks
	Journal	05 Marks	
	Viva Voce	05 Marks	
	Laboratory Work	10 Marks	
02	Group / Individual Survey Project / Presentation and write up on the selected topics of the subjects / Case Studies / Test based on tutorials / Book Review / Poetry Appreciation / Open Book Test		15 Marks
03	Active Participation in routine class instructional deliveries and overall conduct as a responsible learner, mannerism and articulation and exhibit of leadership qualities in organizing related academic activities.		05 Marks
	Total Marks		**40 Marks**

Question Paper Pattern

(Periodical Class Test)

Maximum Marks: 20 Duration: 40 Minutes
Questions to be set: 02
All Questions are Compulsory

Question No.	Particular	Marks
Q-1	Match the Column / Fill in the Blanks / Multiple Choice Questions/ Answer in One or Two Lines (Concept based Questions) (1 Marks / 2 Marks each)	10 Marks
Q-2	Answer in Brief (Attempt any Two of the Three) (5 Marks each)	10 Marks

B) Semester End Examination: 60 % **60 Marks**

Question Paper Pattern

- Duration: The examination shall be of 2 hours duration.

Theory question paper pattern
1. There shall be four questions each of 15 marks. 2. All questions shall be compulsory with internal options. 3. Question may be subdivided into sub-questions a, b, c… and the allocation of marks depends on the weightage of the unit.

Question Paper Pattern
(Practical Courses)

Maximum Marks: 60

Questions to be set: 04

Duration: 2 Hrs.

All Questions are Compulsory Carrying 15 Marks each.

Question No	Particular	Marks
Q-1	Full Length Practical Question	15 Marks
	OR	
Q-1	Full Length Practical Question	15 Marks
Q-2	Full Length Practical Question	15 Marks
	OR	
Q-2	Full Length Practical Question	15 Marks
Q-3	Full Length Practical Question	15 Marks
	OR	
Q-3	Full Length Practical Question	15 Marks
Q-4	Full Length Question	15 Marks
	OR	
Q-4	Short Notes (Any three out of five)	15 Marks

Note:
Practical question of 15 marks may be divided into two sub questions of 7/8 and 10/5 Marks. If the topic demands, instead of practical questions, appropriate theory question may be asked.

Question Paper Pattern
(Theoretical Courses)

Maximum Marks: 60
Questions to be set: 04
Duration: 2 Hrs.
All Questions are Compulsory Carrying 15 Marks each.

Question No	Particular	Marks
Q-1	Full Length Question	15 Marks
	OR	
Q-1	Full Length Question	15 Marks
Q-2	Full Length Question	15 Marks
	OR	
Q-2	Full Length Question	15 Marks
Q-3	Full Length Question	15 Marks
	OR	
Q-3	Full Length Question	15 Marks
Q-4	Full Length Question	15 Marks
	OR	
Q-4	Short Notes (Any three out of five)	15 Marks

Note:
Theory question of 15 marks may be divided into two sub questions of 7/8 and 10/5 Marks.

Passing Standard

The learners to pass a course shall have to obtain a minimum of 40% marks in aggregate for each course where the course consists of Internal Assessment and Semester End Examination. The learners shall obtain minimum of 40% marks (i.e., 16 out of 40) in the Internal Assessment and 40% marks in Semester End Examination (i.e., 24 Out of 60) separately, to pass the course and minimum of Grade E to pass a particular semester A learner will be said to have passed the course if the learner passes the Internal Assessment and Semester End Examination together.

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Janardan Bhagat Shikshan Prasarak Sanstha's

CHANGU KANA THAKUR
ARTS, COMMERCE & SCIENCE COLLEGE, NEW PANVEL (AUTONOMOUS)

Re-accredited 'A+' Grade by NAAC
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Department of Accounting & Finance

Board of Studies in Accounting & Finance

Program: Master of Commerce – Business Analytics

Syllabus of M.Com. Business Analytics Part - II
Choice Based Credit & Grading System (60:40)
w.e.f. Academic Year 2023-24

Sr. No.	Heading	Particulars
1	Title of Programme	M.Com. Business Analytics
2	Eligibility for Admission	Passed M. Com. Business Analytics Part – I (Sem 1 and Sem II)
3	Passing marks	40%
4	Ordinances/Regulations (if any)	---
5	No. of Semesters	Four
6	Level	P.G.
7	Pattern	Semester (60:40)
8	Status	Regular
9	To be implemented from Academic year	2023-2024

Choice Based Credit Grading and Semester System (CBCGS)
M. Com. Business Analytics Part -II Syllabus
To be implemented from the Academic year 2023-2024

Course Structure

M.Com. – Business Analytics Part - II

(To be implemented from Academic Year- 2023-2024)

No. of Courses	Semester I	Credits	No. of Courses	Semester II	Credits
1	**Core Courses (CC)**		**1**	**Core Courses (CC)**	
1	Big data Analytics	**06**	1	Financial & Credit Risk Analytics	**06**
2	Financial Modelling	**06**	2	Human Resources & Marketing Analytics	**06**
3	Artificial Intelligence & Machine Learning	**06**	3	Data mining Techniques	**06**
4	Python Programming	**06**	4	Internship Based Project	**06**
	Total Credits	**24**		**Total Credits**	**24**

Choice Based Credit Grading and Semester System (CBCGS)

M.Com. Business Analytics Part II Syllabus

To be implemented from the Academic year 2023-2024

Semester III

Sr. No.	Course Code	Course Title	Credits	L / Week
1	PAF3BDA	Big data Analytics	**06**	**04**
2	PAF3FMD	Financial Modelling	**06**	**04**
3	PAF3AIM	Artificial Intelligence & Machine Learning	**06**	**04**
4	PAF3PYP	Python Programming	**06**	**04**

Choice Based Credit Grading and Semester System (CBCGS)

M.Com. Business Analytics Part II Semester III Syllabus

To be implemented from the Academic year 2023-2024

1.Big Data Analytics

1	Preamble of the syllabus
	M.Com.in Business Analytics is a post-graduate Programme of Department Accounting & Finance, Changu Kana Thakur Arts, Commerce & Science College, New Panvel. (Autonomous) affiliated to University of Mumbai (MH) The Choice Based Credit, Grading and Semester System to be implemented through this curriculum, would allow students to develop a strong footing in the fundamentals and specialize in the disciplines of his/her liking and abilities. The students pursuing this course will be develop focuses on big data technologies used for storage, analysis and manipulation of data. The student will learn about fundamentals of Hadoop, MapReduce, Pig, Hive, R and have hand on training on the same It also help to develop projects and apply existing data analytics tools to gain comprehensive knowledge on Data analytics. The performance of the learners shall be evaluated into two components i.e., internal and external. The learner's Performance shall be assessed by Internal Assessment with 40 marks and external assessment with 60 marks.

2	Objectives of the course
•	To know the fundamental concepts of big data and analytics
•	To teach the fundamental techniques and principles in achieving big data analytics with scalability and streaming capability.
•	To introduce the tools required to manage and analyze big data like Hadoop, NoSQL
•	To introduce big data tools & Information Standard formats

3	Outcomes of the course	Bloom Taxonomy
	The students will be able to:	
•	Define Big Data and its analytics	Remember
•	Demonstrate fundamental enabling techniques and scalable	Understand
•	Apply various Big Data Activities using Hive	Apply
•	Analyze the Big Data framework like Hadoop and NOSQL to efficiently store and process Big Data to generate analytics	Analyze

Choice Based Credit Grading and Semester System (CBCGS)

M.Com. Business Analytics Part II Semester III Syllabus

To be implemented from the Academic year 2023-2024

1.Big Data Analytics

4.Modules at a Glance

SN	Modules	No. of Lectures
1	Fundamentals of Big Data Analysis	5
2	Big Data Analysis in Practice	10
3	NoSQL	15
4	Hadoop & MapReduce	15
5	Big data Analysis	15
	Total	**60**

5. Detailed Syllabus

SN	Modules/ Units
1	**Fundamentals of Big Data Analysis**
	• What is big data, why big data, • convergence of key trends, unstructured data, industry examples of big data, web analytics,
2	**Big Data Analysis in Practice**
	• big data and marketing, fraud and big data, risk and big data, credit risk management, big data and algorithmic trading, big data and healthcare, big data in medicine, advertising and • big data, big data technologies, introduction to Hadoop, open-source technologies, cloud and big data, mobile business intelligence, Crowd sourcing analytics, inter and trans firewall analytics
3	**NoSQL**
	• Introduction to NoSQL, • aggregate data models, aggregates, key-value and document data models, • relationships, graph databases, schemeless databases, materialized views, • distribution models, sharding, master-slave replication, peer-peer replication, • sharding and replication, consistency, relaxing consistency, version stamps, map-reduce, partitioning and combining, composing map- reduce calculations.
4	**Hadoop & MapReduce**
	• Data format, analyzing data with Hadoop, scaling out, Hadoop streaming, Hadoop pipes, design of Hadoop distributed file system (HDFS), • HDFS concepts, Java interface, data flow, Hadoop I/O, data integrity, compression, serialization, Avro, file-based data structures • MapReduce workflows, unit tests with MRUnit, test data and local tests, anatomy of MapReduce job run, classic Map-reduce, • YARN, failures in classic Map-reduce and YARN, job scheduling, shuffle and sort, task execution, MapReduce types, input formats, output formats.
5	**Big data Analysis**
	• HBase, data model and implementations, HBase clients, HBase examples, praxis. • Cassandra, Cassandra data model, Cassandra examples, Cassandra clients, • Hadoop integration, • Hive, data types and file formats, • HiveQL data definition, HiveQL data manipulation, HiveQL queries.

6. References Books

Big Data Analytics

- Business Intelligence and Analytic Trends for Today's Businesses", Wiley, 2013
- Hadoop: The Definitive Guide, Tom White, Third Edition, O'Reilley, 2012.
- Hadoop Operations, Eric Sammer, O'Reilley, 2012.
- Programming Hive, E. Capriolo, D. Wampler, and J. Rutherglen, O'Reilley, 2012.
- HBase: The Definitive Guide, Lars George, O'Reilley, 2011.
- Cassandra: The Definitive Guide, Eben Hewitt, O'Reilley, 2010.

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Choice Based Credit Grading and Semester System (CBCGS)

M.Com. Business Analytics Part II Semester III Syllabus

To be implemented from the Academic year 2023-2024

2.Financial Modelling

1	Preamble of the syllabus
	M.Com.in Business Analytics is a post-graduate Programme of Department Accounting & Finance, Changu Kana Thakur Arts, Commerce & Science College, New Panvel. (Autonomous) affiliated to University of Mumbai (MH) The Choice Based Credit, Grading and Semester System to be implemented through this curriculum, would allow students to develop a strong footing in the fundamentals and specialize in the disciplines of his/her liking and abilities. The students pursuing this course would have to become well versed with Intermediate level Microsoft Excel Functions for the purpose of financial modelling. The performance of the learners shall be evaluated into two components i.e., internal and external. The learner's Performance shall be assessed by Internal Assessment with 40 marks and external assessment with 60 marks.

2	Objectives of the course
•	To Understand the Microsoft Excel Functions for the purpose of financial modelling.
•	To analyze and interpret the financial performance of companies through their financial statements.
•	To identify Advanced, excel techniques and Advanced analytical tools for Financial Modelling
•	To Prepared common size statements, forecasting financial statements.
•	To Determined efficient portfolio, creating dynamic portfolios, portfolio insurance, fixed income portfolio management using excel.
•	To develop Company Analysis, Terminal Value, Financial projections, Discounting Cash Flows and Corporate Valuation.

3	Outcomes of the course	Bloom Taxonomy
	The Students will able to :	
•	Explain Time value of money models, Basic statistical tools and Microsoft Excel Functions.	Understand
•	Analyse the various financial and other tools in excel.	Analyse
•	Measure Advanced techniques , Analytical Tools, Sensitivity Analysis, Database Functions and Finance functions for Financial Modeling.	Evaluate
•	Determined efficient portfolio, creating dynamic portfolios, portfolio insurance, fixed income portfolio management.	Evaluate
•	Elaborate Company Analysis, Terminal Value, Financial projections, Discounting Cash Flows, Final Analysis & Reasonability Testing and Corporate Valuation.	Create

Choice Based Credit Grading and Semester System (CBCGS)

M.Com. Business Analytics Part II Semester III Syllabus

To be implemented from the Academic year 2023-2024

2.Financial Modelling

4.Modules at a Glance

SN	Modules	No. of Lectures
1	Introduction to Financial Modeling	15
2	Introduction to Corporate Finance, Accounting, & Modeling	5
3	Advanced Excel for Financial Modeling	10
4	Excel in Accounting & Portfolio Theory	15
5	Financial Modeling & Valuation	15
	Total	**60**

5. Detailed Syllabus

SN	Modules/ Units
1	**Introduction to Financial Modeling**
	• Overview • Basic technical skills and setup – Excel and Python • Time value of money models • Basic statistical tools • Monte Carlo methods
2	**Introduction to Corporate Finance, Accounting, & Modeling**
	• Intro to Corporate Finance • Enterprise value • Financial Accounting & Statement Analysis • Integrated Financial Modeling • Intro to DCF Modeling • Sensitivity Analysis • Intro to LBO Modeling
3	**Advanced Excel for Financial Modeling**
	• Advanced techniques to Expedite Workflow • Advanced Analytical Tools & Sensitivity Analysis • Database Functions for Finance • Functions for Financial Modeling
4	**Excel in Accounting & Portfolio Theory**
	• Preparing common size statements directly from trial balance, forecasting financial statements using excel, analyzing financial statements by using spreadsheet model, excel in project appraisal, determining project viability. • Risk analysis in project appraisal, simulation in project appraisal, excel in valuation, determination of value drivers, discontinued cash flow valuation, risk analysis in valuation. • Determining efficient portfolio, creating dynamic portfolios, portfolio insurance, fixed income portfolio management using excel, excel in derivatives black and schools' model in excel, Greeks in excel, real options valuation, building a mega model.
5	**Financial Modeling & Valuation**
	• Company Analysis • Terminal Value • Financial projections • Discounting Cash Flows • Final Analysis & Reasonability Testing • Corporate Valuation

6. References Books

Financial Modelling

- Principles of Financial Modelling - Model Design and Best Practices Using Excel and VBA (The Wiley Finance Series)
- Mastering Financial Modelling in Microsoft Excel – Alastair Day
- Financial Modelling in Practice: A Concise Guide for Intermediate and Advanced Level: 443 (The Wiley Finance Series)
- Financial Modeling: by Simon Benninga.

Choice Based Credit Grading and Semester System (CBCGS)

M.Com. Business Analytics Part II Semester III Syllabus

To be implemented from the Academic year 2023-2024

3. Artificial Intelligence & Machine Learning

1	Preamble of the syllabus
	M.Com.in Business Analytics is a post-graduate Programme of Department Accounting & Finance, Changu Kana Thakur Arts, Commerce & Science College, New Panvel. (Autonomous) affiliated to University of Mumbai (MH) The Choice Based Credit, Grading and Semester System to be implemented through this curriculum, would allow students to develop a strong footing in the fundamentals and specialize in the disciplines of his/her liking and abilities. The students pursuing this course will be understand the basic concepts of Supervised and Unsupervised learning. They can able to apply regression analysis on the data available. They can design appropriate machine learning and apply on real world problems and also optimize different Machine Learning & Deep Learning Techniques. The performance of the learners shall be evaluated into two components i.e., internal and external. The learner's Performance shall be assessed by Internal Assessment with 40 marks and external assessment with 60 marks.

2	Objectives of the course
•	To understand the need of Machine Learning & Statistics for solving various problems
•	To understand the basic concepts of Supervised and Unsupervised learning.
•	To apply regression analysis on the data available.
•	To design appropriate machine learning and apply on real world problems
•	To optimize different Reinforcement Learning & Deep Learning Techniques

3	Outcomes of the course	Bloom Taxonomy
	The students will be able to:	
•	Explain need of Artificial Intelligence and Machine Learning in Data analytics.	Understand
•	Demonstrate fundamentals of Supervised and Unsupervised learning.	Understand
•	Apply regression analysis on the data available	Apply
•	Analyze different Reinforcement Learning & Deep Learning Techniques	Analyze

Choice Based Credit Grading and Semester System (CBCGS)

M.Com. Business Analytics Part II Semester III Syllabus

To be implemented from the Academic year 2023-2024

3. Artificial Intelligence & Machine Learning

4.Modules at a Glance

SN	Modules	No. of Lectures
1	Artificial Intelligence for Business Planning	10
2	Supervised Learning and Applications	15
3	Unsupervised Learning algorithms	15
4	Artificial Neural Networks & Deep Learning	15
5	Reinforcement Learning	5
Total		**60**

5. Detailed Syllabus

SN	Modules/ Units
1	**Artificial Intelligence for Business Planning**
	• Introduction and Data sources for AI, Knowledge acquisition, Knowledge representation, History of ML, Framework for building ML Systems-KDD process mode, Introduction of Machine Learning Approaches – (Artificial Neural Network, Clustering, Reinforcement Learning, Decision Tree Learning, Bayesian networks, Support Vector Machine, Genetic Algorithm), Issues in Machine Learning, Data Science Vs Machine Learning.
2	**Supervised Learning and Applications**
	• Supervised Learning: Introduction to classification, Linear Regression, Metrics for evaluating linear model, Multivariate regression, Non-Linear Regression, K-Nearest Neighbor, Decision Trees, Logistic Regression, Support Vector Machines, Model Evaluation, Applications of supervised learning in multiple domains Application of supervised learning in solving business problems such as pricing, customer relationship management, sales and marketing.
3	**Unsupervised Learning algorithms**
	• Unsupervised Learning: Clustering, Hierarchical clustering, Partitioning Clustering- K-mean clustering, Density Based Methods DBSCAN, OPTICS, Applications of unsupervised learning in multiple domains, Association rules: Introduction, Large Item sets, Apriori Algorithms and applications
4	**Artificial Neural Networks & Deep Learning**
	• Perceptron model, Multilayer perceptron, Gradient descent and the Delta rule, Multilayer networks, Backpropagation Algorithm, • DEEP LEARNING - Introduction, concept of convolutional neural network, Types of layers – (Convolutional Layers, Activation function, pooling, fully connected), Concept of Convolution (1D and 2D) layers, Training of network, Recent Applications
5	**Reinforcement Learning**
	• Introduction to Reinforcement Learning, Learning Task, Example of Reinforcement Learning in Practice, Learning Models for Reinforcement – (Markov Decision process, Q Learning - Q Learning function, Q Learning Algorithm), Application of Reinforcement Learning, Introduction to Deep Q Learning.

6.References Books

Artificial Intelligence & Machine Learning

- Artificial Intelligence for Business, 2nd Edition by Doug Rose
- The Hundred-Page Machine Learning Book by Andriy Burkov
- Machine Learning For Absolute Beginners by Oliver Theobald
- Deep Reinforcement Learning Hands-On - Maxim Lapan (2020)

Choice Based Credit Grading and Semester System (CBCGS)

M.Com. Business Analytics Part II Semester III Syllabus

To be implemented from the Academic year 2023-2024

4.Python Programming

1	Preamble of the syllabus
	M.Com.in Business Analytics is a post-graduate Programme of Department Accounting & Finance, Changu Kana Thakur Arts, Commerce & Science College, New Panvel. (Autonomous) affiliated to University of Mumbai (MH) The Choice Based Credit, Grading and Semester System to be implemented through this curriculum, would allow students to develop a strong footing in the fundamentals and specialize in the disciplines of his/her liking and abilities. The students pursuing this course will get knowledge of why Python is a useful scripting language for developers as well as Applications. Also, learn how to write loops and functions in Python as well as determine how to use lists, tuples, and Range in Python programs. It helps to Identify the commonly used operations involving file systems and regular expressions. Even the learners can apply and develop different python packages for mathematical, scientific applications, the model for data analysis and evaluate the model performance and for web data analysis. The performance of the learners shall be evaluated into two components i.e., internal and external. The learner's Performance shall be assessed by Internal Assessment with 40 marks and external assessment with 60 marks.

2	Objectives of the course
•	To understand why Python is a useful scripting language for developers as well as Applications.
•	To learn how to write loops and functions in Python.
•	To determine how to use lists, tuples, and Range in Python programs.
•	To Identify the commonly used operations involving file systems and regular expressions.
•	To apply and develop different python packages for mathematical, scientific applications, the model for data analysis and evaluate the model performance and for web data analysis.

3	Outcomes of the course	Bloom Taxonomy
	The students will be able to:	
•	Explain significance of Python language for developers.	Understand
•	Make use of loops, functions, lists, tuples, and Range in Python programs.	Apply
•	Analyze the different ways of data analysis with the help of Python application.	Analyze

Choice Based Credit Grading and Semester System (CBCGS)

M.Com. Business Analytics Part II Semester III Syllabus

To be implemented from the Academic year 2023-2024

4.Python Programming

4.Modules at a Glance

SN	Modules	No. of Lectures
1	Introduction	12
2	Conditionals, Loops and Functions.	12
3	List, Ranges & Tuples in Python	12
4	I/O and Error Handling in Python	12
5	Python For Data Analysis	12
	Total	**60**

5.Detailed Syllabus

SN	Modules/ Units
1	**Introduction**
	• Introduction, history of Python, Comparison of Python with other languages (C/C++, Java), Salient features of Python, How Python runs Programs? ,Areas where Python is in use, Industries that are using Python, • Install Python and Environment Setup , Identifiers, Keywords and Indentation Comments in Python ,Command line arguments ,Getting User Input ,Python Data Types ,What are variables? ,Python Core objects and Functions
2	**Conditionals, Loops and Functions.**
	• Conditionals and Loops: if statement, else Statement, elif Statement, while Statement, for Statement break Statement, continue Statement, pass Statement. • Functions: Built-in Functions, User defined functions: Defining a Function, Calling a Function, Various Function Arguments.
3	**List, Ranges & Tuples in Python**
	• Introduction Lists in Python, Understanding Iterators, Generators, Comprehensions and Lambda Expressions, Introduction Generators and Yield Next and Ranges, Understanding and using Ranges, Ordered Sets with tuples
4	**I/O and Error Handling In Python**
	• Input and Output, Input function, Input with raw_input(),Output with old string format, Python format function • Python Exceptions Handling: What is Exception? Handling an exception, try…. except…else, try-finally clause, Argument of an Exception, Python Standard Exceptions, Raising an exception, User-Defined Exceptions
5	**Python For Data Analysis**
	• NumPy: Introduction to NumPy, creating arrays, using arrays and Scalars, Indexing Arrays, Array Transposition, Universal Array Function, Array Processing, Arrar Input and Output3 • Pandas: What is pandas? Where it is used? Series in pandas, Index objects, Reindex, Drop Entry, Selecting Entries, Data Alignment, Rank and Sort, Summary Statics, Missing Data, Index Hierarchy

6.References Books

Python Programming
• *Python: The Complete Reference - McGraw Hill Education.* • *Python for Data Analysis: Data Wrangling with Pandas, NumPy, and IPython, 2nd Edition - Shroff/O'Reilly* • *Data Analytics using Python - Wiley* • *Learning With Python - Dreamtech Press* • *Python Programming Using Problem Solving Approach 2Nd Edition by Reema Thareja, Oxford India*

Choice Based Credit Grading and Semester System (CBCGS)

M.Com. Business Analytics Part II Semester IV Syllabus

To be implemented from the Academic year 2023-2024

Semester IV

Sr. No.	Course Code	Course Title	Credits	L / Week
1	PAF4FCA	Financial & Credit Risk Analytics	6	4
2	PAF4HMA	Human Resources & Marketing Analytics	6	4
3	PAF4DMT	Data Mining Techniques	6	4
4	PAF4IBP	Internship Based Project	6	4
		Total credits	**24**	

Choice Based Credit Grading and Semester System (CBCGS)

M.Com. Business Analytics Part II Semester IV Syllabus

To be implemented from the Academic year 2023-2024

1. Financial & Credit Risk Analytics

1	Preamble of the syllabus
	M.Com.in Business Analytics is a post-graduate Programme Department Accounting & Finance, Changu Kana Thakur Arts, Commerce & Science College, New Panvel. (Autonomous) affiliated to University of Mumbai (MH) The Choice Based Credit, Grading and Semester System to be implemented through this curriculum, would allow students to develop a strong footing in the fundamentals and specialize in the disciplines of his/her liking and abilities. The students pursuingthis course would have to understand the credit risk and its rating and also understanding of credit commitments and its application. They can able to understand risk management and corporate governance and also measure riskiness of a stock or a portfolio position. The performance of the learners shall be evaluated into two components i.e., internal and external. The learner's Performance shall be assessed by Internal Assessment with 40 marks and external assessment with 60 marks.

2	Objectives of the course
•	To Learn about the different kinds of credit available.
•	To gain the knowledge of credit risk and rating
•	To Understand the credit commitments and its application
•	To develop the knowledge of corporate governance and risk management.
•	To Measure riskiness of a stock or a portfolio position.

3	Outcomes of the course	Bloom Taxonomy
	The students will be able to:	
•	Define about the different kinds of credit available.	Remember
•	Demonstrate knowledge of credit risk and rating	Understand
•	Explain the credit commitments and its application	Understand
•	Apply the knowledge of corporate governance and risk management.	Apply
•	Analyze the portfolio position.	Analyze

Choice Based Credit Grading and Semester System (CBCGS)

M.Com. Business Analytics Part II Semester IV Syllabus

To be implemented from the Academic year 2023-2024

1. Financial & Credit Risk Analytics

4.Modules at a Glance

SN	Modules	No. of Lectures
1	Introduction	5
2	Trade Credit Risk	10
3	Letter of Credit and Loan Commitments	15
4	Operational Risk: Overview	15
5	Credit Analysis & Rating	15
	Total	**60**

5. Detailed Syllabus

SN	Modules/ Units
1	**Introduction**
	• Financial Credit: Meaning & Objectives, • Credit Risk, Credit Analysis, Seven C's, • Credit Analysis Process, Credit Process, Documentation, Loan Pricing and Profitability Analysis. • Regulations, • Types of Credit Facilities: Various types of Credit Facilities- Cash Credit, Overdrafts, Demand Loan, Bill Finance – Drawee Bill Scheme, Bill Discounting. • Cash Delivery: Types of Facilities, Modes of Delivery.
2	**Trade Credit Risk**
	• Sole -Banking Arrangement, Multiple Banking Arrangement, • Consortium Lending, Syndication. Credit Thrust, Credit Priorities, • Credit Acquisitions, Statutory & Regulatory restrictions on Advances. • Credit Appraisal: Validation of proposal, Dimensions of Credit Appraisals, Structuring of Loan documents, • Credit Risk, Credit Risk Rating, Credit Worthiness of Borrower, Purpose of Loan, Source of Repayment, Cash Flow, Collateral.
3	**Letter of Credit and Loan Commitments**
	• Quasi Credit Facilities: Advantages of Non-Fund Facilities, Various types of NFB Facilities, Various types Letter of Credits, Assessment of LC limits, Bills Purchase/ Discounting under LC. • Loan commitments, Un-funded lines of credit and their characteristics • Various types of Bank Guarantees: Performance Guarantee, Financial Guarantees, Deferred Payment Guarantees, • Types of Performance and Financial Guarantees, Assessment of Bank Guarantees Limit, Period of Claim under Guarantee.
4	**Operational Risk: Overview**
	• Risk & Uncertainty, Financial Sector, Risk Types, Operational Risk Management- Recruitment & Training, Work flow Design, Work Flow Documentation, Delegation of Authority, Independent Internal Audit, Independent Compliance Function, Independent Risk Management Function, System Audit, Corporate Governance, Whistle Blower Policy, Risk Management Culture.
5	**Credit Analysis & Rating**
	• Importance of credit analysis, Stages of credit analysis profitability analysis and pricing of loans, Credit risk analysis (Debt ratios and risk of leverage), Analysis of working capital, liquidity , operating and cash cycle risk . Credit Rating: Measurement of Risk, Objective of Rating, Internal & External Rating, Model Credit Rating, Methodology of Rating, Internal & External Comparison, Model Rating Formats.

6.References Books

Financial & Credit Risk Analytics
• Credit Risk Modeling Theory And Applications by David Land, New Age International (P) Ltd., Publishers • Credit Risk Analytics: Measurement Techniques, Applications, and Examples in SAS (Wiley and SAS Business Series) by Daniel Roesch (Author), Harald Scheule (Author), Bart Baesens (Author) • The Bank Credit Analysis Handbook: A Guide for Analysts, (Wiley Finance) by Jonathan Golin (Author), Philippe Delhaise (Author) • Credit Risk Measurement: New Approaches to Value at Risk and Other Paradigms (Wiley Finance) Hardcover – Import, 20 March 2002 by Anthony Saunders (Author), Linda Allen (Author)

Choice Based Credit Grading and Semester System (CBCGS)

M.Com. Business Analytics Part II Semester IV Syllabus

To be implemented from the Academic year 2023-2024

2.Human Resources & Marketing Analytics

1	Preamble of the syllabus
	M.Com.in Business Analytics is a post-graduate Programme of Department Accounting & Finance, Changu Kana Thakur Arts, Commerce & Science College, New Panvel. (Autonomous) affiliated to University of Mumbai (MH) The Choice Based Credit, Grading and Semester System to be implemented through this curriculum, would allow students to develop a strong footing in the fundamentals and specialize in the disciplines of his/her liking and abilities. The students pursuing this course will get the introduction of the theory, concepts, and business application of HR analytics, and the ability to track, store, retrieve, analyze and interpret HR data to support decision making, They will understand use of applicable benchmarks/metrics to conduct research and statistical analyses related to Human Resource Planning and Recruitment and Selection. They have to study various tools to have marketing insights in various marketing areas through empirical data and they can interpret the marketing data for effective marketing decision making. The performance of the learners shall be evaluated into two components i.e., internal and external. The learner's Performance shall be assessed by Internal Assessment with 40 marks and external assessment with 60 marks.

2	Objectives of the course
•	To introduces the student to the theory, concepts, and business application of HR analytics, and the ability to track, store, retrieve, analyze and interpret HR data to support decision making.
•	To understand use of applicable benchmarks/metrics to conduct research and statistical analyses related to Human Resource Planning and Recruitment and Selection.
•	To apply the proper software for recording, maintaining, retrieving, and analyzing Effectiveness of training and performance
•	To understand the basic concepts of Marketing Analytics
•	To study various tools to have marketing insights in various marketing areas through empirical data
•	To draw inferences from data in order to answer descriptive, predictive, and prescriptive questions relevant to marketing managers

3	Outcomes of the course	Bloom Taxonomy
	The students will be able to:	
•	Define Basic concept of HR analytics and Marketing Analytics	Remember
•	Explain how to conduct research and statistical analyses linked to human resource planning, recruitment, and selection using appropriate benchmarks and metrics.	Understand
•	Apply the proper software for recording, maintaining, retrieving, and analyzing Effectiveness of training and performance	Apply
•	Analyze various tools to have marketing insights in various marketing areas through empirical data	Analyze
•	Develop conclusions from data in order to address descriptive, predictive, and prescriptive issues that concern marketing managers	Create

Choice Based Credit Grading and Semester System (CBCGS)

M.Com. Business Analytics Part II Semester IV Syllabus

To be implemented from the Academic year 2023-2024

2.Human Resources & Marketing Analytics

4.Modules at a Glance

SN	Modules	No. of Lectures
1	Introduction to HR Analytics	5
2	Human Resource Planning and forecasting	10
3	Performance Analysis	15
4	Introduction to marketing Analytics	03
5	Pricing Analytics & Sales Forecasting	15
6	Customer Analytics & Advertising Analysis	12
	Total	60

5. Detailed Syllabus

SN	Modules/ Units
1	**Introduction to HR Analytics**
	Evolution of HR Analytics, HR information systems and data sources, Evolution of HR Analytics; HR Metrics and HR Analytics; Intuition versus analytical thinking; HRMS/HRIS and data sources; Analytics frameworks like LAMP, HR Scorecard & Workforce Scorecard.
2	**Human Resource Planning and forecasting**
	Quantitative and Qualitative Dimensions of HR Planning, Methods and Techniques of HR Demand Forecasting, Data Base for Manpower Forecasting. Recruitment and Selection Analytics: Evaluating Reliability and validity of selection models, Finding out selection bias, Predicting the performance and turnover.
3	**Performance Analysis**
	Predicting employee performance, training requirements, evaluating training and development, optimizing selection and promotion decisions, Analyzing and Classifying training needs, measuring training effectiveness, Predicting training effectiveness and performance. Designing a Compensation System: Understanding compensation Analytics, quantifiable data, Factors affecting Compensation & Benefits, Analytics for compensation planning, Competency Scorecard.
4	**Introduction to marketing Analytics**
	Meaning, characteristics, advantages and disadvantages of marketing analytics, Market Data Sources (Primary and Secondary). Market Sizing: Stakeholders, Applications & Approaches (Top-down and Bottom-up), PESTLE Market Analysis, Porter Five Force Analysis
5	**Pricing Analytics & Sales Forecasting**
	I)Pricing Analytics Pricing Policy and Objectives, Estimating Demand: Price Elasticity, Estimating Linear and Power Demand Curves, Optimize Pricing, Incorporating Complementary Products, Pricing using Subjective Demand Curve, Pricing Multiple Products, Price Bundling & Nonlinear Pricing: Pure Bundling & Mixed Bundling, Determine Optimal Bundling Pricing, Profit Maximizing strategies using Nonlinear Pricing Strategies, Price Skimming & Sales, Revenue Management: Markdown Pricing and Handling Uncertainty **II)Sales Forecasting** Introduction, Simple Linear Regression & Multiple Regression model to forecast sales, Forecasting in Presence of Special Events, Modeling trend and seasonality; Ratio to moving average forecasting method, Using S curves to Forecast Sales of a New Product
6	**Customer Analytics & Advertising Analysis**
	I)Customer Analytics: Customer Lifetime Value: Concept, Basic Customer Value, Measuring Customer Lifetime value, Estimating Chance that customer is still active, Using Customer Value to value a business Market Segmentation : The segmentation-targeting-positioning (STP) framework, Segmentation, The concept of market segmentation, managing the segmentation process, Deriving market segments and describing the segments using Cluster analysis **II)Advertising Analysis**: Measuring the Effectiveness of Advertising, Pay per Click (PPC) Online Advertising

6.References Books

Human Resources & Marketing Analytics
• *Bhattacharya Kumar Dipak, HR Analytics Understanding Theories and Applications, SAGE Publishing.* • *Banerjee Pratyush, Pandey Jatin and Gupta Manish (2019), Practical Applications of HR Analytics, SAGE Publishing.* • *Marketing Analytics: Data-Driven Techniques with Microsoft Excel by Wayne L 2. Winston Wiley India Pvt. Ltd.* • *Marketing Analytics: Strategic Models and Metrics by Stephan Sorger, Create Space Publishing*

Choice Based Credit Grading and Semester System (CBCGS)

M.Com. Business Analytics Part II Semester IV Syllabus

To be implemented from the Academic year 2023-2024

3.Data Mining Techniques

1	Preamble of the syllabus
	M.Com. in Business Analytics is a post-graduate Programme of Department Accounting & Finance, Changu Kana Thakur Arts, Commerce & Science College, New Panvel. (Autonomous) affiliated to University of Mumbai (MH) The Choice Based Credit, Grading and Semester System to be implemented through this curriculum, would allow students to develop a strong footing in the fundamentals and specialize in the disciplines of his/her liking and abilities. The students pursuing this course would have to develop Understanding of classification, clustering algorithms. They can able to apply classification and clustering methods applicable to predictive analytics using R and also create Understanding of how to formulate predictive analytics using R & Understand pattern discovery using R The performance of the learners shall be evaluated into twocomponents i.e., internal and external. The learner's Performance shall be assessed by Internal Assessment with 40 marks and external assessment with 60 marks.

2	Objectives of the course
•	Understanding of data mining and its functions
•	Understanding of classification, clustering algorithms
•	To apply classification and clustering methods applicable to predictive analytics using R
•	Understanding of how to formulate predictive analytics using R & Understand pattern discovery using R

3	Outcomes of the course	Bloom Taxonomy
	The students will be able to:	
•	Define data mining and its functions	Remember
•	Explain classification and clustering algorithms	Understand
•	Apply formulate predictive analytics using R & Understand pattern discovery using R	Apply
•	Analyze classification and clustering methods applicable to predictive analytics using R	Analyze

Choice Based Credit Grading and Semester System (CBCGS)

M.Com. Business Analytics Part II Semester IV Syllabus

To be implemented from the Academic year 2023-2024

3.Data Mining Techniques

4.Modules at a Glance

SN	Modules	No. of Lectures
1	Data Mining & Classification	15
2	Data mining process	10
3	Predictive analytics Using R	10
4	Understand pattern discovery using R	10
5	Data Visualization & Descriptive Analytics Using R (Practicals)	15
	Total	**60**

5. Detailed Syllabus

SN	Modules/ Units
1	Data Mining & Classification
	• Data Mining: Overview, Motivation, Definition & Functionalities, Data Processing, Form of Data Preprocessing, Data Cleaning.: Missing Values, Noisy Data, (Binning, Clustering, Regression, Computer and Human inspection), Inconsistent Data, Data Integration and Transformation. Data Reduction: -Data Cube Aggregation, Dimensionality reduction, Data Compression. • Classification: Definition, Data Generalization, Analytical Characterization, Analysis of attribute relevance, Mining Class comparisons, Statistical measures in large Databases, Statistical-Based Algorithms, Distance-Based Algorithms, Decision Tree-Based Algorithms. Clustering: Introduction, Similarity and Distance Measures, Hierarchical and Partitional Algorithms. Hierarchical Clustering- CURE and Chameleon. Association rules: Introduction, Large Item sets, Basic Algorithms, Parallel and Distributed Algorithms, Neural Network approach
2	Data Mining Process
	• Data Mining process- CRISP -DM Methodology, Data Collection and Business understanding, Data and Datasets, importing data into R, Data Preprocessing: Data Cleaning, Transforming variables, creating variables, Dimensionality Reduction, Modeling: Exploratory data analysis, dependency modeling using association rules, clustering, anomaly detection,
3	Predictive analytics Using R
	• Predictive analytics-Evaluation Metrics, Tree-Based Model, Support Vector Machines, Artificial Neural Networks and deep learning, Model Ensembles, Evaluation- The holdout and random subsampling, cross validation, bootstrap estimates, recommended procedures, reporting and deployment, Case Study.
4	Understand pattern discovery using R
	• Transactional Dataset, Apriori Analysis, Generating Filtering Rules, Plotting, Sequential Dataset, Apriori Sequence Analysis, Understanding the Results, Business Cases
5	Data Visualization & Descriptive Analytics Using R (Practicals)
	• Data Visualization in R: Graphs, Histograms,Scatter plots in R Language,R – Pie Charts • Descriptive Analysis, Need of Descriptive Analysis, Descriptive Analysis in R, R functions for computing descriptive analysis

6.References Books

Data Mining Techniques
• *Introduction to Data Mining,* by Tan, Steinbach & Kumar • *Data Mining and Data Warehousing: Principles and Practical Techniques* • *Data Mining for Business Analytics, An Indian Adaptation: Concepts, Techniques, and Applications in R* • *Data Mining and Predictive Analytics (Wiley Series on Methods and Applications in Data Mining),* Wiley; 2nd edition • *An Introduction to Statistical Learning: with Applications in R,* by Gareth James & Daniela Witten

Choice Based Credit Grading and Semester System (CBCGS)

M.Com. Business Analytics - Part I Semester –I & II

To be implemented from the Academic year 2023-24

Scheme of Evaluation

Scheme of examination for each semester

The performance of the learners shall be evaluated into two components. The learner's Performance shall be assessed by Internal Assessment with 40% marks in the first component. External assessment with 60% marks in the second component. The allocation of marks for the Internal Assessment and Semester End Examinations are as shown below:-

A) Internal Assessment: 40 **%** **40 Marks**

Internal Assessment- (Courses without Practical Courses)

Sr. No.	Particular		Marks
01	One periodical class test / online examination to be conducted in the given semester		20 Marks
02	One case study/project with presentation based on the curriculum to be assessed by the teacher concerned		15 Marks
	Presentation	10 Marks	
	Written Document	05 Marks	
03	Active participation in routine class instructional deliveries and overall conduct as a responsible learner, mannerism and articulation and exhibit of leadership qualities in organizing related academic activities		05 Marks
	Total Marks		**40 Marks**

(For Courses with Practical)

Sr. No.	Particular		Marks
01	**Practical Examination**		20 Marks
	Journal	05 Marks	
	Viva Voce	05 Marks	
	Laboratory Work	10 Marks	
02	One case study/project with presentation based on the curriculum to be assessed by the teacher concerned		15 Marks
	Presentation	10 Marks	
	Written Document	05 Marks	
03	Active participation in routine class instructional deliveries and Overall conduct as a responsible learner, mannerism and articulation and exhibit leadership qualities in organizing related academic activities		05 Marks
	Total Marks		**40 Marks**

Question Paper Pattern

(Periodical Class Test)

Maximum Marks: 20 Duration: 40 Minutes

Questions to be set: 02

All Questions are Compulsory

Question No.	Particular	Marks
Q-1	Match the Column / Fill in the Blanks / Multiple Choice Questions/ Answer in One or Two Lines (Concept based Questions) (1 Marks / 2 Marks each)	10 Marks
Q-2	Answer in Brief (Attempt any Two of the Three) (5 Marks each)	10 Marks

B) Semester End Examination: 60 % 60 Marks

- Duration: The examination shall be of 2 hours duration.

Question Paper Pattern

Theory question paper pattern
1. There shall be four questions each of 15 marks. 2. All questions shall be compulsory with internal options. 3. Question may be subdivided into sub-questions a, b, c… and the allocation of marks depends on the weightage of the unit.

Question Paper Pattern
(Practical Courses)

Maximum Marks: 60

Questions to be set: 04

Duration: 2 Hrs.

All Questions are Compulsory Carrying 15 Marks each.

Question No	Particular	Marks
Q-1	Full Length Practical Question	15 Marks
	OR	
Q-1	Full Length Practical Question	15 Marks
Q-2	Full Length Practical Question	15 Marks
	OR	
Q-2	Full Length Practical Question	15 Marks
Q-3	Full Length Practical Question	15 Marks
	OR	
Q-3	Full Length Practical Question	15 Marks
Q-4	Full Length Question	15 Marks
	OR	
Q-4	Short Notes (Any three out of five)	15 Marks

Note:
Practical question of 15 marks may be divided into two sub questions of 7/8 and 10/5 Marks.
If the topic demands, instead of practical questions, appropriate theory question may be asked.

Question Paper Pattern
(Theoretical Courses)

Maximum Marks: 60
Questions to be set: 04
Duration: 2 Hrs.
All Questions are Compulsory Carrying 15 Marks each.

Question No	Particular	Marks
Q-1	Full Length Question	15 Marks
	OR	
Q-1	Full Length Question	15 Marks
Q-2	Full Length Question	15 Marks
	OR	
Q-2	Full Length Question	15 Marks
Q-3	Full Length Question	15 Marks
	OR	
Q-3	Full Length Question	15 Marks
Q-4	Full Length Question	15 Marks
	OR	
Q-4	Short Notes (Any three out of five)	15 Marks

Note:
Theory question of 15 marks may be divided into two sub questions of 7/8 and 10/5 Marks.

Passing Standard

The learners to pass a course shall have to obtain a minimum of 40% marks in aggregate for each course where the course consists of Internal Assessment and Semester End Examination. The learners shall obtain minimum of 40% marks (i.e., 16 out of 40) in the Internal Assessment and 40% marks in Semester End Examination (i.e., 24 Out of 60) separately, to pass the course and minimum of Grade E to pass a particular semester A learner will be said to have passed the course if the learner passes the Internal Assessment and Semester End Examination together.

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