SHRI VISHWAKARMA SKILL UNIVERSITY
(Enacted by the Act 25 of 2016, State of Haryana)
DUDHOLA, PALWAL

MBA/MBA (Business Analytics)

NSQF Level 6.5

Batch 2024-2026 and Onwards

MBA Business Analytics Scheme and Syllabus - For Academic Session 2024 and Onwards

Scheme

Semester 1: 26 Credits
Semester 2: 26 Credits
Semester 3: 28 Credits
Semester 4: 22 Credits

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Semester 1

Code	Subject	Credits				Hours				Theory (Marks)			Practical (Marks)			Total
		T	Tu	P	To	T	P	TH	NH	I	E	To	I	E	To	
24PMBA01	Managerial Economics	3	1		4	60	0	60	120	30	70	100	0	0	0	100
24PMBA02	Accounting for Managers	3	1		4	60	0	60	120	30	70	100	0	0	0	100
24PMBA03	Principles of Management & Organisational Behaviour	3	1		4	60	0	60	120	30	70	100	0	0	0	100
24PMBA04	Statistical Analysis for Managers	3	1		4	60	0	60	120	30	70	100	0	0	0	100
24PENG01	Professional Communication	1	0		1	15	0	15	30	15	35	50	0	0	0	50
24PENG02	Professional Communication Practical	0	0	1	1	0	30	30	30	0	0	0	15	35	50	50
24PMBA05	Information Technology for Managers	3	1		4	60	0	60	120	30	70	100	0	0	0	100
24PMBA06	Legal and Business Environment	3	1		4	60	0	60	120	30	70	100	0	0	0	100
Total		19	6	1	26	375	30	405	780	195	455	650	15	35	50	700

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Semester 2

Code	Subject	Credits				Hours				Theory (Marks)			Practical (Marks)			Total
		T	Tu	P	To	T	P	TH	NH	I	E	To	I	E	To	
24PMBA07	Marketing Management	3	1	0	4	60	0	60	120	30	70	100	0	0	0	100
24PMBA08	Human Resource Management	3	1	0	4	60	0	60	120	30	70	100	0	0	0	100
24PMBA09	Financial Management	3	1	0	4	60	0	60	120	30	70	100	0	0	0	100
24PMBA10	Business Research Methods	3	1	0	4	60	0	60	120	30	70	100	0	0	0	100
24PMBA11	Strategic Management	3	1	0	4	60	0	60	120	30	70	100	0	0	0	100
24PMBA12	Operations Research	3	1	0	4	60	0	60	120	30	70	100	0	0	0	100
	Entrepreneurship	2	0	0	2	30	0	30	60	30	70	100	0	0	0	100
Total		20	6	0	26	390	0	390	780	210	490	700	0	0	0	700

**Each student shall undergo a summer internship (6-8 weeks) after completion of the second semester.*

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Semester 3

Code	Subject	Credits				Hours				Theory (Marks)			Practical (Marks)			Total
		T	Tu	P	To	T	P	TH	NH	I	E	To	I	E	To	
24PMBA13	Project Management	3	1	0	4	60	0	60	120	30	70	100	0	0	0	100
Elective 1		3	1	0	4	60	0	60	120	30	70	100	0	0	0	100
Elective 2		3	1	0	4	60	0	60	120	30	70	100	0	0	0	100
Elective 3		3	1	0	4	60	0	60	120	30	70	100	0	0	0	100
Elective 4		3	1	0	4	60	0	60	120	30	70	100	0	0	0	100
Elective 5		3	1	0	4	60	0	60	120	30	70	100	0	0	0	100
24PMBA14	Summer Internship Report	0	0	4	4	0	120	120	120	0	0	0	50	50	100	100
Total		18	6	4	28	360	120	480	840	180	420	600	50	50	100	700

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Semester 4

Code	Subject	Credits				Hours				Theory (Marks)			Practical (Marks)			Total
		T	Tu	P	To	T	P	TH	NH	I	E	To	I	E	To	
Elective 6		3	1	0	4	60	0	60	120	30	70	100	0	0	0	100
Elective 7		3	1	0	4	60	0	60	120	30	70	100	0	0	0	100
Elective 8		3	1	0	4	60	0	60	120	30	70	100	0	0	0	100
Elective 9		3	1	0	4	60	0	60	120	30	70	100	0	0	0	100
24PMBA15	Research Project	0	0	6	6	0	180	180	180	0	0	0	100	100	200	200
24UHPE01	Human Values & Professional Ethics	2	0	0	2	30	0	30	60	30	70	100	0	0	0	100
Total		11	3	8	22	210	240	450	660	120	280	400	170	130	300	700

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**Corporate readiness shall be a practical subject oriented to be taught by activities and exercise. Thus, providing practical exposure and a simulative corporate environment to the students.*

Qualification

Functional Analyst – TMS (Level 6)
Warehouse Data Analyst (Level 6)
Automotive Customer Relationship Manager (Level 7)
Digital Marketing Manager (Level 6)
Sales Manager (Level 6)
Airport Terminal Operations Manager (Level 6)

Activities for Notional Hours:

- **Case Studies**: Analyzing real-world business scenarios helps students apply theoretical knowledge to practical situations. It enhances problem-solving skills and decision-making abilities.

- **Business Simulations**: Simulations allow students to experience running a business in a risk-free environment. They can make strategic decisions, manage resources, and understand the consequences of their actions.

- **Internships and Consulting Projects**: Hands-on experience through internships or consulting projects provides practical exposure to industry dynamics, builds networks, and enhances skills like project management and client interaction.

- **Networking Events**: Attending industry conferences, guest lectures, and networking events helps students connect with professionals, alumni, and potential employers. It fosters relationships and opens up career opportunities.

- **Entrepreneurship Challenges**: Competitions or workshops focusing on entrepreneurship encourage students to develop business ideas, create business plans, and pitch their concepts to investors or judges.

- **Workshops and Seminars**: Short-term workshops or seminars on specific topics such as leadership, negotiation, or digital marketing provide focused learning and skill development.

- **Leadership Development Programs**: Programs that focus on developing leadership skills, such as team building, conflict resolution, and ethical decision-making, prepare students for managerial roles.

- **Global Immersion Programs**: International study trips or exchange programs expose students to global business practices, cultural diversity, and international markets.

- **Research Projects**: Undertaking research projects allows students to delve deep into specific areas of interest, contribute to academic knowledge, and develop analytical and critical thinking skills.

- **Soft Skills Training**: Training sessions on communication, presentation skills, time management, and emotional intelligence enhance overall professional development.

- **Career Development Workshops**: Sessions on resume writing, interview skills, personal branding, and job search strategies prepare students for the job market and career advancement.

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□ **Ethics and Corporate Social Responsibility (CSR) Initiatives**: Discussions, workshops, or projects focusing on ethical dilemmas and the role of businesses in society foster a sense of responsibility among students.

□ **Technology and Innovation Labs**: Access to labs or courses focusing on emerging technologies, digital transformation, and innovation equips students with relevant skills for the future of business.

□ **Industry Visits and Company Tours**: Visiting companies and interacting with industry professionals provides insights into organizational cultures, operations, and industry trends.

□ **Peer Learning Groups**: Collaborating with classmates on group projects, case analyses, or study groups enhances teamwork, communication skills, and peer learning.

Syllabus

SEMESTER-I

MANAGERIAL ECONOMICS

Course Code: 24PMBA01
Course Credit: 4 (3-1-0)
Max. Marks: 100 (30I + 70E)

Course Objective: The objective of this course is to familiarize the students with the concepts and techniques used in microeconomic theory and to develop managerial capabilities for effective decision-making in a variety of different business situations and market conditions.

Learning Outcomes:

LO1: To understand the basics of Micro Economics and decision-making
LO2: To analyse the theories of demand
LO3: To apply critical thinking in production problems and input purchase decisions.
LO4: To analyze the various market structures and Types of market competition.
LO5: To understand and analyse models of oligopoly.

Unit	Topics
I LO1 LO2	**Basics of Micro Economics:** Introduction to Microeconomics. Objectives, Marginal Analysis and its Uses in the Business Decision-Making.
II LO1 LO2 LO3	**Theories of Demand:** Preference, Utility Function, Indifference Curve, Revealed Preference Approach, Income and Substitution effects, Demand Functions, Demand Forecasting; Managerial Applications.
III LO3 LO4	**Production and Cost:** The production function, Maximization optimization approach to developing optimal input combination, Input demand function, Short-term and long-run production function, Law of variable proportion and return to scale, and Iso-quant curves.

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IV LO4 LO5	**Market Structure:** Profit Maximization under Different Market Structures, Perfect Competition, Monopoly, Price Discrimination, Other Pricing Strategies of Firms, and Monopolistic Competition.
V LO4 LO5	**Market Structure and Macro Economics:** Oligopoly, Modern theories of firm: Bamoul's theory of sales maximization, Managerial Theory, Behavioral Theory; National Income: Concept and Measurement.

Suggested Readings

1. Samuelson, W. F., Marks, S. G., & Zagorsky, J. L. (2021). *Managerial economics*. John Wiley & Sons.
2. Dwivedi, D. N. (1980). *Managerial economics*. Vikas Publishing House.
3. Png, I. (2022). *Managerial economics*. Routledge.
4. Baye, M. R. (2010). *Managerial economics and business strategy*. McGraw-Hill.
5. Beg, M. A. (2010). *Managerial economics*. Ane Books Pvt Ltd.

ACCOUNTING FOR MANAGERS

Course Code: 24PMBA02
Course Credit: 04 (3-1-0)
Max Marks:100 (30I+70E)

Course Objective: The core objective of this course shall be to provide a basic understanding of accounting concepts and related fields. Students shall be able to interpret accounting transactions, financial statements, and company fundamentals with a managerial perspective.

Learning Outcomes
LO1: To understand accounting-related basic framework.
LO2: To gain familiarity with the debit and credit approach and accounting terminologies.
LO3: To understand the format of the income statement and balance sheet.
LO4: To understand the format of the cash flow statement.
LO5: To analyse and interpret financial statements.

Unit	Topics
I LO1	**Basics of Accounting:** Basic concepts of accounting, the need and importance of accounting, principles, and conventions of accounting, and branches of accounting.
II LO2	**Accounting Fundamentals:** Concept of double entry system with basic examples, accounting equation, trial balance.
III LO3	**Financial Statements:** Income Statement and Balance Sheet format; Item-wise practical examples of companies' statements.
IV LO4	**Cash Flow Statement:** Types of cash flows, sources and uses of cash, the format of cash flow statement, item-wise practical examples from companies' statements.
V LO5	**Financial Statement Analysis:** Analyse financial statements with different methods; financial ratios and comparative statements.

Suggested Readings

1. Anthony, R.N., Hawkins, F.D., & Merchant, K.A. Accounting: Text and Cases (latest ed.) Tata McGraw Hill.
2. Hilton, R.W., & Platt, D.E. Managerial Accounting (latest ed.) Tata McGraw Hill.
3. Dhamija, S. (2015). *Financial Accounting for Managers, 2/e*. Pearson Education India.

4. Maheshwari, S. N., Maheshwari, S. K., & Maheshwari, C. S. K. (2022). *Financial and management accounting*. Sultan Chand & Sons.
5. Shah, F. (2023). Financial Accounting for Management, Paresh Shah, Oxford University Press. *Journal of Business Strategy Finance and Management*, *5*(1), 58.

PRINCIPLES OF MANAGEMENT AND ORGANIZATIONAL BEHAVIOUR

Course Code: 24PMBA03
Course Credit: 04 (3-1-0)
Max. Marks: 100 (30I+70E)

Course Objective: The course will equip students with a deep understanding of management principles, organizational behavior theories, and practical skills essential for effective leadership and team management in diverse organizational contexts.

Learning Outcomes:

LO1: To understand the evolution of management thought and its impact on modern management practices.
LO2: To apply principles and techniques of managerial functions to effectively manage organizational resources and achieve strategic objectives.
LO3: To analyse concepts of organizational behaviour to enhance individual and organizational effectiveness within diverse organizational settings.
LO4: To analyze group dynamics for enhancing organizational efficiency and team collaboration.
LO5: To evaluate the impact of organizational design, culture, and cross-cultural differences on organizational effectiveness and adaptability in diverse global contexts.

Unit	Topic
I (LO1)	**Basics of Management and Evolution-** Meaning and Nature of Management: Definition and Concept of Management, Evolution of Management Thought, Differentiating Management from Administration; Tasks and Responsibilities of a Professional Manager: Managerial Levels, Managerial Skills, Functions and Roles of Managers; Management by Objectives (MBO).
II LO2	**Managerial Functions and Processes-** Planning: Concept, Process, and Techniques, organizing: Principles and Organization Structures (Line & Staff), Leading: Definition, Principles, and Techniques of Effective Leadership, Staffing: Importance and Methods of Recruitment and Selection, controlling: Definition, Nature, Importance, and Techniques; Decision Making.
III LO3	**Organizational Behavior and Fundamentals-** Definition, Scope, and Importance of Organizational Behavior; Personality: Concept, Types, and Implications in Organizational Settings; Perception; Attitude: Formation, Types, and Influence on Behavior; Learning: Concept and Theories; Motivation: Definition, Importance, and Major Theories.
IV LO4	**Group Dynamics and Teamwork:** Group Formation and Development; Team Building and Collaboration; Leadership - Concept, Importance and Styles; Power and Politics; Conflict Management.
V LO5	**Organizational Processes and Structure:** Organizational Design and Structure; Organizational Culture and Climate; Cross-Cultural Organizational Behavior: Cultural Diversity in Organizations, Cross-Cultural Differences and Organizational Effectiveness.

Suggested Readings:

1. Robbins, S. P., Judge, T. A., & Vohra, N. (latest ed.). Organizational Behavior. Pearson Education.
2. Greenberg, J., & Baron, R. A. (latest ed.). Behavior in Organizations. Pearson Education.
3. Stoner, J. A. F., Freeman, R. E., Kodwani, A. D., et al. (latest ed.). Management. Pearson Education.
4. Rao, T. V. (latest ed.). Organizational Behaviour and Human Performance. Sage Publications India.
5. Koontz, H., Weihrich, H., Mark V., Cannice, M. V. (latest ed.). Essentials of Management – An International Innovation and Leadership Perspective. McGraw Hill.

STATISTICAL ANALYSIS FOR MANAGERS

Course Code: 24PMBA04
Course Credit: 04 (3-1-0)
Max. Marks: 100 (30I+70E)

Course Objective: This course provides an introduction to quantitative techniques used for decision-making in business and economics. It covers mathematical, statistical, and computational methods to analyze data and make informed decisions.

Learning Outcomes
LO1: To understand the fundamental concepts of quantitative techniques.
LO2: To apply mathematical and statistical methods to solve real-world problems.
LO3: To develop skills in data analysis and interpretation.
LO4: To communicate the results of statistical analysis in the context of a business problem.
LO5: To interpret the relevance of statistical findings for decision-making.

Unit	Contents
I LO1	**Data Collection and Presentation:** Types of Data: Primary vs. Secondary, Data Collection Methods, Data Presentation: Tables, Charts, Graphs; Basic Probability Concepts, Probability Distributions- Binomial, Poisson, Normal.
II LO1,2	**Descriptive Statistics:** Measures of Central Tendency-Mean, Median, Mode; Measures of Dispersion-Range, Quartile Deviation, Variance, Standard Deviation; Data Distribution and Skewness.
III LO2,3	**Hypothesis Testing:** Sampling, types, Null and Alternative Hypotheses; Types of Errors; t-tests, z-tests, Analysis of Variance and Chi-square tests; Wilcoxon signed-rank test, Mann–Whitney U test, Kruskal–Wallis, Kolmogorov–Smirnov test.
IV LO3,4	**Correlation and Regression Analysis:** Correlation- concept, Karl Pearson's correlation coefficient and Spearman's rank correlation, Introduction to Simple linear regression analysis, determining the lines of regression, Multiple Linear Regression Analysis, Coefficient of determination. Assumptions of Multiple Linear Regression Analysis.
V LO5	**Time Series Analysis:** Introduction to forecasting, Components of Time Series, Trend Analysis, Seasonal Variations, Smoothing techniques, Methods of Forecasting.

Suggested Readings
1. Richard I. Levin and David S. Rubin, Statistics for Management, Pearson publications, latest edition.
2. Ken Black, Business Statistics: Contemporary Decision Making, Wiley publications, latest edition.
3. Naval Bajpai, Business Statistics, Pearson Publications, Latest Edition.

4. Styne and Foster, Statistics for Business: Decision making and analysis Pearson Publications, latest edition.
5. R.S Bhardwaj, Business Mathematics Excel Books. New Delhi, Latest Edition.

PROFESSIONAL COMMUNICATION

Course Code: 24PENG01
Course Credit: 01(1-0-0)
Max. Marks: 50(15I+35E)

Course Objectives:

The course is designed to groom communication skills of the learners to enable them to communicate effectively in diverse professional situations.

Learning Outcomes: After completing this course, the learns will be able to

1. Communicate in diverse professional and inter-cultural situations.
2. Draft various types of messages.
3. Perform well in interviews and meetings.
4. Comprehend and practice communication ethics

Unit	Topics
I Business Communication	Introduction to Business Communication, Types of Communication, 7Cs ofCommunication, Listening Skills, Legal and Ethical issues in Communication
II Written Communication	Improving personal writing skills, Planning and executing different types of messages, Writing reports, Business Correspondence-letters, Agenda and Minutes, Resume writing
III Interpersonal Skills	Team Intelligence, Assertive Behaviour, Emotional Intelligence, Negotiation Skills, Mentoring and Appraisals, Presentation Skills
IV Inter-Cultural Communication	Culture, Types of Culture, Communication Strategies for cross-culturalcommunication, Business Etiquettes across cultures
V Interviews	Interviews and its types, Group Discussions, Mock Interviews, Communication during Exit Interviews, Preparing for interviews, Networking and Social media

Recommended Readings:

1. Bovee, C., & Thill, J.V., and Raina, R.L. *Business Communication Today*. New York: Pearson,2016.
2. Lata, Pushp, and Sanjay Kumar. *Communication Skills*. 2nd ed. New Delhi: OUP, 2019.
3. Lehman, C. M., Dufrene D. D., and Sinha, M. *BCOM: The South Asian Perspective on Business Communication*. New Delhi: Cengage Learning, 2016.
4. Monippally, Matthukutty, M. *Business Communication: From Principles to Practice*. New Delhi: McGraw Hill Pub., 2018.

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5. Mukerjee, H. S. *Business Communication: Connecting at Workplace.* New-Delhi: OxfordUniversity Press, 2012.
6. Murphy, H. A., Hildebrandt, H.W., and Thomas, J.P. *Effective Business Communication.* Boston:McGraw-Hill Companies, 1997.
7. Post, Emily. *The Etiquette Advantage in Business.* New York: Collins, 2005.
8. Ramesh, Gopalaswamy, and Mahadevan Ramesh. *The Ace of Soft Skills: Attitude, Communicationand Etiquette for Success.* Noida: Pearson, 2019.
9. Sandra, M. O. *Handbook of Corporate Communication and Strategic Public Relations: Pure andApplied.* New Delhi: Routledge, 2004.
10. Sinha, K. K. *Taxmann's Business Communication.*4th Revised ed. New Delhi: Taxmann's Pub.,2018.
11. Taylor, Grant. *English Conversation Practice.* Indian ed. Chennai: McGraw Hill Education Pvt.Ltd., 2017.

Professional Communication Practical

Course Code: 24PENG02
Course Credit: 01(0-1-0)
Max. Marks: 50(35I+15E)

Course Objective: This course is designed to strengthen the communication abilities of the learnersby providing them hands-on practice.

Learning Outcomes: After completing this course, the learns will be able to

1) Demonstrate knowledge and understanding of a range of professional or public communication situations.
2) Perform effectively in diverse professional and public communication situations like interviews and negotiations, drafting emails and resume etc.

Details:

1. Situational Conversations
2. Listening Skills
3. Resume Writing
4. Mock Interviews
5. Group Discussion
6. Presentation Skills
7. Negotiation Skills
8. Email Writing
9. Public Speaking
10. Extempore Speech

Note: The teacher should play the role of the facilitator and allow the learners maximumtime to practice these activities. The focus should be primarily on helping the learners overcome the LSWR barrier and gradually move towards honing these skills to enable the learners use them in professional communication situations.

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INFORMATION TECHNOLOGY FOR MANAGERS

Course Code: 24PMBA05
Course Credit: 04 (3-1-0)
Max. Marks: 100 (30I+70E)

Course Objective: This course is designed to provide students with practical skills and knowledge in various computer applications that are essential for efficient business operations. The course covers a range of software tools used for data analysis, project management, communication, and more.

Learning Outcomes

LO1: To understand information technology solution to a real-world problem including design, implementation, and evaluation of the computer-based system.
LO2: To design and use word, spreadsheets and database applications for business processes and tracking
LO3: To construct a conceptual database model and write queries for relational databases
LO4: To enhance communication through presentation and data visualisation tools.
LO5: To apply various communication technologies for collaboration in business organisation

Unit	Concept
I LO1	**Introduction:** Process Modelling and digital convergence; protocols, IP Addresses, Bounded and unbounded medium Technologies, ISP, Web Server, Domain Names, Mail Server, Simple Mail Transfer Protocol (SMTP), Post Office Protocol (POP3) and Internet message access protocol (IMAP4).
II LO2	**Word Processing Applications:** Creating and formatting documents, Advanced features: mail merge, templates, and macros; Collaborative editing and sharing documents; Spreadsheet Applications - Excel or Google Sheets; Data entry, formatting, and basic formulas; Charts and graphs for data visualization; Pivot tables and data analysis
III LO3	Database Management Systems: Introduction to databases and DBMS (Access, MySQL); Creating and managing tables; Queries, forms, and reports; Project Management Software- Using tools like Microsoft Project, Creating project plans, Gantt charts.
IV LO4	Presentation Software and Data Visualization: Designing effective presentations, Data Analysis and Visualization- Tools for data analysis (Excel, Tableau, Power BI), Creating dashboards and reports, Interpreting and presenting data insights.
V LO4	Communication and Collaboration Tools: Email management (Outlook, Gmail), Collaborative tools (Teams, Slack, Zoom); Cloud Computing and File Management -Introduction to cloud services (OneDrive, Google Drive, Dropbox), Security and privacy considerations; Overview of emerging technologies in business (AI, ML, IoT)

Suggested Readings

1. *Microsoft Office 365: In Practice,* Randy Nordell, Latest Edition
2. Alter, S. (2001). Information systems: Foundation of e-business. Prentice Hall PTR.
3. Turban, E., Leidner, D., McLean, E., & Wetherbe, J. (2008). Information Technology For Management, (With CD). John Wiley & Sons.
4. Turban, E., McLean, E., & Wetherbe, J. (1998). Information technology for management making connections for strategic advantage. John Wiley & Sons, Inc..
5. Bolisani, E., & Scarso, E. (1999). Information technology management: a knowledge-based perspective. Technovation, 19(4), 209-217.

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LEGAL AND BUSINESS ENVIRONMENT

Course Code: 24PMBA06
Course Credit: 4 (3-1-0)
Max. Marks: 100 (30I + 70E)

Course Objective: This course aims to analyze the legal aspects of the micro and macro environment of business in a coherent and critical manner. To impart knowledge of different Business Regulations and Environmental Laws.

Learning Outcomes:

LO1: To understand various concepts of the Indian Business Environment.
LO2: To recognize the impact of the business environment on business activities,
LO3: To apply the legal knowledge in different business situations
LO4: To identify various facts and the uniqueness of the legal business environment.
LO5: To analyze the legal business environment with recent trends around the world.

Unit	Topics
I LO1 LO2	**Business Environment:** Concepts, Significance and Nature of Business Environment; Elements of environment: Internal and External; Techniques of Environmental Scanning and Monitoring.
II LO2 LO3	**Economic Environment of Business:** India as an Emerging Economy, Economic Planning in India; Balance of Payment, Foreign investment in India; Exchange Rate Regimes, Capital Account Convertibility.
III LO3 LO4	**Government Policies:** Industrial Policy, Fiscal Policy, Monetary Policy, Foreign Trade Policy; Economic Reforms: Liberalization, Privatization & Globalization (LPG) and Structural Adjustment Programs, Banking Sector Reforms in India, Financial Sector Reforms.
IV LO4 LO5	**Political and Legal Environment of Business:** Critical elements of Political Environment; Government and Business; Changing dimensions of Legal Environment in India; Competition Act 2002, Foreign Exchange Management Act and Licensing Policy; Consumer Protection Act 2019
V LO4 LO5	**International and Recent Issues in the environment:** Multinational Corporations; Foreign collaborations and Indian business; Non-resident Indians and Corporate Sector. Public sector reforms, BRICS and India, The New Development Bank (NDB) and AIIB by BRICS

Suggested Readings

1. Upadhyay, S. (2005). Business Environment.
2. Schmidheiny, S. (1992). *Changing course: A global business perspective on development and the environment* (Vol. 1). MIT press.
3. Shatzkin, M., & Riger, R. P. (2019). *The Book Business: What Everyone Needs to Know®*. Oxford University Press.
4. Bock, A. J. (2018). *The business model book: Design, build and adapt business ideas that drive business growth*. Pearson UK.
5. Mallor, J., & Barnes, A. J. (2020). Business law the ethical, global, and e-commerce environment.

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Semester 2

MARKETING MANAGEMENT

Course Code: 24PMBA07
Course Credit: 04 (3-1-0)
Max. Marks: 100 (30I+70E)

Course Objective: To introduce the students to the concepts, strategies and contemporary issues involved in the marketing of products and services.

Learning Outcomes:

LO1: To understand the fundamentals of marketing and the influence of macro and micro environments on global marketing strategies.
LO2: To apply market segmentation, targeting, positioning, and strategic marketing planning in developing effective market strategies.
LO3: To analyze product mix strategies and pricing factors.
LO4: To analyze distribution channels, conflict management, retailing, logistics, and promotional strategies in marketing.
LO5: To evaluate trends in marketing, including service, social media, green, CRM, rural, and emerging trends.

Unit	Topics
I LO1	**Introduction to Marketing:** Nature and Scope of Marketing, Marketing Concepts, Marketing Philosophies, Customer Value, Holistic Marketing, Marketing Environment: Environmental monitoring, Understanding the impact of Macro and Micro environment on Marketing, Global Marketing.
II LO2	**Identifying and Selecting Markets:** Consumer Buying Behaviour, Organizational Buying Behaviour, Market Segmentation, Targeting and Positioning, Marketing Research and Market Information, Strategic Marketing Planning Process.
III LO3	**Product Mix Strategies:** Product, Planning and Development, Product Life Cycle, New Product development, Brands, Packaging and Labelling, Developing Pricing Strategies: Setting Price, Factors influencing Price Determination
IV LO5	**Channels of Distribution:** Designing Distribution Channels, Managing Conflicts and Controls in Channels, Retailing, Wholesaling and Logistics, Marketing Communication: Role of Promotion in Marketing, Integrated Marketing Communication, Promotional Mix.
V LO5	**Trends in Marketing:** Service Marketing, Social Media Marketing, Green Marketing, Customer Relationship Management, Rural marketing, other emerging trends.

Suggested Readings

1. Kotler, P., & Keller, K. L. (latest ed.). Marketing Management. Pearson Education.
2. Baines, P., Fill, C., Page, K., & Sinha, P. K. (latest ed.). Marketing: Asian Edition. Oxford University Press.
3. Ramaswamy, V. S., & Namakumari, S. (latest ed.). Marketing Management: A Strategic Decision Making Approach, Global Perspective, Indian Context. Sage Publications.
4. Walker, O. C., Mullins, J., & Boyd Jr., H. W. (latest ed.). Marketing Strategy: A Decision-Focused Approach. McGraw Hill Education.
5. Etzel, M., Walker, B., Stanton, W., & Pandit, A. (latest ed.). Marketing Management. McGraw Hill Education.

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HUMAN RESOURCE MANAGEMENT

Course Code: 24PMBA08
Course Credit: 04 (3-1-0)
Max. Marks: 100 (30I+70E)

Course Objective: The course aims to provide students with a comprehensive understanding of Human Resource Management (HRM) principles, strategies, and practices, equipping them with the knowledge and skills necessary to effectively manage HR functions, align them with organizational objectives, and navigate contemporary challenges in the field.

Learning Outcomes:
LO1: To understand the roles, functions, and challenges of Human Resource Management.
LO2: To understand the concepts of job analysis, design, and human resource planning alignment.
LO3: To apply strategic recruitment and selection processes.
LO4: To analyse training, performance, and compensation strategies for optimization
LO5: To evaluate employee relations and global HRM challenges.

Unit	Topics
I LO1	**Introduction to HRM and Strategic Alignment-** HRM functions as Line, Staff, and Functional roles, HRM competencies and roles within organizations, integration of HRM with organizational strategy, challenges in strategic HRM processes.
II LO2	**Job Analysis, Design, and Human Resource Planning-**Concept and importance of job analysis, methods and steps in job analysis, differentiate between job description and job specification, job rotation, enlargement, and enrichment, Overview of Human Resource Planning (HRP).
III LO3	**Recruitment and Selection-**Recruitment sources and methods, selection process for Person-Job and Person-Organization fit, Orientation & Induction.
IV LO4	**Employee Training, Performance Management, and Compensation-**Training process including needs assessment, design, and evaluation, concept of performance management and its objectives, identify performance standards and appraisal methods, Job evaluation, Reward Management.
V LO5	**Employee Relations and Global HRM-**Overview of Industrial Relations, Global HRM practices and organizational culture, Role of technology and ethical considerations in HRM.

Suggested Readings

1. Dessler G. and Varkkey, B. (latest ed.). *Human Resource Management*. Pearson Education
2. Denisi A. et al., (latest ed.). *HR: A South Asian Perspective.* Cengage Learning
3. Ivancevich J.M., (latest ed.). *Human Resource Management.* McGraw Hill Education
4. Aswathappa, (latest ed.). *Human Resource Management.* McGraw Hill Education
5. Kandula, S. R., & Rao, P. (latest ed.). *Human Resource Management: A Contemporary Text*. Prentice Hall India.

FINANCIAL MANAGEMENT

Course Code: 24PMBA09
Course Credit: 04 (3-1-0)
Max Marks:100 (30I+70E)

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Course Objective: To provide a strong conceptual foundation for corporate finance and develop analytical skills by associating the tools and techniques

Learning Outcomes:
LO1: To understand the basics of financial management.
LO2: To apply the capital budgeting techniques in industrial practices
LO3: To evaluate the different sources cost of capital
LO4: To analyse the impact of dividend on firm's value
LO5: To implement best practices of corporate finance in real world situation

Unit	Topics
I LO1	**Introduction to Financial Management:** Objectives, Functions & Scope of Financial Management, Role of Financial Manager, Interface of Financial Management with other functional areas.
II LO2	**Capital Budgeting:** Nature and importance of capital budgetary process, Appraisal Criteria – Net Present Value, Internal Rate of Return, Profitability Index, Payback Period, Average Rate of Return & Benefit-Cost ratio.
III LO3	**Cost of Capital Estimation:** Concept and importance, Factors affecting cost of capital, Computations of cost of various sources of finance, Weighted Average Cost of Capital.
IV LO4	**Capital Structure Determination:** Introduction, Features of an optimal capital structure, Factors determining capital structure, capital structure theories.
V LO4	**Dividend Policy and Working Capital Management:** Introduction, Determinants of dividend policy, Dividend theories, Working Capital Management, Nature & Importance of Working Capital Management.

Suggested Readings

1. Damodaran, A. (2014). *Applied corporate finance*. John Wiley & Sons.
2. Pandey, I. M. (1995). *Finance: A management guide*. PHI Learning Pvt. Ltd.
3. Chandra, P. (2017). *Fundamentals of financial management*. McGraw Hill Education.
4. Van Horne James, C. (2002). *Financial Management & Policy, 12/E*. Pearson Education India.
5. Brealey, R. A., Myers, S. C., & Allen, F. (2014). *Principles of corporate finance*. McGraw-hill.

BUSINESS RESEARCH METHODS

Course Code: 24PMBA10
Course Credit: 04 (3-1-0)
Max Marks:100 (30I+70E)

Course Objective: To equip with basics of research methodology and understanding of insightful application of modern analytical tools and techniques for decision making.

Learning Outcomes:
LO1: To develop an understanding of different types of research and the objectives behind conducting research.
LO2: To apply research design principles and literature review in research settings
LO3: To apply principles of sampling, questionnaire design, and measurement scales effectively in research.
LO4: To apply descriptive statistics, factor analysis, discriminant analysis, and parametric/non-parametric tests in research data interpretation.
LO5: To analyze qualitative data and to create well-structured research reports with proper citation and avoidance of plagiarism.

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Unit	Topic

I LO 1	**Introduction to Business Research-** Meaning and Purpose of Research; Types of Research; Research Problem and Formulation; Hypothesis of Study: Formulating research hypotheses, Types of hypotheses; Research Proposal Format.
II LO 2	**Research Design and Literature Review-** Research Design: Meaning and importance, Types, Errors and types of errors; Research Problem and Hypothesis: Selecting and analyzing the research problem, Formulating the problem statement, Formulating hypotheses; Literature Review: Purpose and importance, Sources, Procedure.
III LO 3	**Sampling, Questionnaire Design, and Measurement Scales-** Sampling: Defining target population, Sampling frame and sampling units, methods, sample size, sample design, sampling and non-sampling errors; Data Collection Methods: Primary and secondary data; Process of Questionnaire development.
IV LO 4	**Statistical Analysis and Data Interpretation-** Descriptive Statistics and Data Analysis: Descriptive statistics, exploratory and confirmatory factor analysis, Discriminant analysis; Parametric and non-parametric tests; Descriptive statistics (frequencies, central tendency), Inferential statistics (relationship between variables, hypothesis testing).
V LO 5	**Qualitative Data Analysis, Report Writing, and Plagiarism-** Qualitative Data Analysis: Approaches, Coding and thematic analysis, Content Analysis; Research Report Writing: types of research reports, Report writing essentials, Final proofreading and report format, Bibliography and appendices; Plagiarism: techniques to avoid plagiarism, importance of proper citation and referencing.

Suggested Readings

1. Creswell, J. W. (Latest Edition). *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches, 3rd Edition*. SAGE Publications.
2. Cooper, D. R., Schindler, P. S., & Sharma, J. K. (Latest Edition). *Business Research Methods, 11th Edition*. Tata McGraw Hill Education, New Delhi.
3. Sekaran, U., & Bougie, R. (Latest Edition). *Research Methods for Business, 5th Edition*. Wiley India, New Delhi.
4. Krishnaswamy, K. N., Shivkumar, A. I., & Mathiranjan, M. (Latest Edition). *Management Research Methodology: Integration of Principles, Methods and Techniques*. Pearson Education, New Delhi.
5. Chawla, D., & Sondhi, N. (Latest Edition). *Research Methodology: Concepts and Cases*. S. Chand & Company Ltd.

STRATEGIC MANAGEMENT

Course Code: 24PMBA11
Course Credit: 4 (3-1-0)
Max. Marks: 100 (30I + 70E)

Course Objective: The objective of this course is to understand business strategies, analyse and implement suitable strategies in varied business environmental situations.

Learning Outcomes:

LO1: To understand business policies and strategies for business.
LO2: To appraise the environmental factors of business
LO3: To analyse different business strategies
LO4: To understand and implement business strategies
LO5: To evaluate strategies and control mechanisms

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Unit	Topics
I LO1 LO2	**Introduction to Business Policy and Strategic Management:** Definition, Concept, Objective and Significance, The levels at which strategy operates, Characteristic of Strategic Management, An Overview: Strategic Management Process, Concept of Strategic Decision Making.
II LO LO2 LO3	**Environment Appraisal:** Concept and Environmental Sector; PEST Analysis, Organizational Appraisal: Concepts and Capability Factors; Porter's Value Chain Model, Framework for developing Strategic Advantage, SWOT Analysis.
III LO3 LO4	**Type of Strategies:** Guidelines for Crafting Successful Business Strategies. Strategy Analysis and Choice: Corporate Level Strategy Analysis: BCG Matrix and GE 9 cell Matrix, Business Level Strategy Analysis: Life Cycle Analysis, Porter's Five Forces of Industry Analysis.
IV LO4 LO5	**Strategy Implementation:** Interrelation Between Strategy Formulation and Implementation, Aspects of Strategy Implementation, An overview of Project, Procedural Implementation, Resource Allocation, Structural Implementation, Structural Consideration, Structure for Strategies, An overview of Functional Strategies.
V LO4 LO5	**Strategy Evaluation and Control:** An Overview of Strategic Evaluation and Control, Strategic Control and Operational Control, Techniques for Strategic Evaluation and Control, Role of Organizational Systems in Evaluation, McKinsey's 7s Framework.

Suggested Readings

1. Kazmi, Azhar, "Business Policy and Strategic Management", TMH, New Delhi.
2. Wheelen and Hunger, Strategic Management and Business Policy, Pearson Education
3. Chandrasekharan: Strategic Management, Oxford University Press.
4. A A Thompson Jr., A J Strickland III, J E Gamble, Crafting and Executing Strategy- The Quest for Competitive Advantage, Tata McGraw Hill
5. David, Fred R. "Strategic Management-Concept and Cases", Pearson Education

OPERATIONS RESEARCH

Course Code: 24PMBA12
Course Credit: 4 (3-1-0)
Max. Marks: 100 (30I + 70E)

Course Objective: To build capabilities in the students for analyzing different situations in the industrial/ business scenario involving limited resources and finding the optimal solution within constraints. To impart comprehensive knowledge and understanding of theoretical fundamentals in Operational Research.

Learning Outcomes:
LO1: To analyse business system with limited constraints and depict it in a model form.
LO2: To convert the business problem into a mathematical model.
LO3: To develop critical thinking and use PERT and CPM techniques to improve decision making.
LO4: To identify different types of decision-making environments and choose the appropriate decision-making approaches for each.
LO5: To enhance employability.

Unit	Contents
I LO1,5	**Linear Programming:** Formulation of L.P. Problems, Graphical Solutions; Simplex Method, Big-M method and Two-phase method; Duality (Interface with Excel solver application)

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II LO1,2	**Transportation and Assignment Problem:** Transportation Problem: Formulation, Solution by N.W. Corner Rule, Least Cost method, Vogel's Approximation Method, Modified Distribution Method; Assignment Problem: Hungarian Method.
III LO3,5	**Network Analysis:** Basic Concept, Construction of the Network diagram, Critical Path Analysis, float and slack analysis (Total float, free float, independent float), Time-Cost optimization in Project. (Interface with Project Management software)
IV LO4,5	**Decision Theory:** Decision making environment, Construction of Pay off Table, Opportunity Loss Table, Decision under uncertainty, Decision under Risk: Expected Monetary Value (EMV), Expected Opportunity Loss (EOL), Expected Profit with Perfect Information (EPPI) and Expected Value of Perfect Information (EVPI); Decision Tree Analysis
V LO4,5	**Game Theory and Simulation:** Introduction, Two person Zero-Sum games, Maximin Minimax Principle, Games without Saddle point- Mixed strategy, Dominance Rule; Simulation: Concept, Monte Carlo Simulation.

Suggested Readings

1. N.D Vohra, Quantitative Techniques in Management Tata McGraw-Hill, Latest Edition
2. Taha, H A, Operations Research - An Introduction Prentice Hall of India Private Limited, N. Delhi, Latest Edition.
3. J. K. Sharma, Operations Research- Theory and applications Macmillan India Ltd, latest edition.
4. Ravindran, A., Phillips, D. T and Solberg, J. J., Operations Research: Principles and Practice, John Willey and Sons, latest edition.
5. Mohan Man, Gupta P. K., Swarup Kanti, Introduction to Management Science Operations Research, 19th ed. Sultan Chand & Sons.

ENTREPRENEURSHIP

Course Code: 24PMBM01
Course Credit: 2 (2-0-0)
Max. Marks: 100 (30I+70E)

Course Objective: The objective of this course is to expose the learner to the fields of entrepreneurship development. Focus will be to train the students to develop new projects and encouraging them to start their own ventures.

Learning Outcomes: Students will be able to:

CO1: Understanding of Entrepreneurial Ecosystem.
CO2: Conduct feasibility studies
CO3: Develop a business plan
CO4: Appraise various initiatives and supporting startups
CO5: Understanding of registration process for launching startups.

Course Content:

Unit / CO	Course Content
Unit-I (CO1)	Concept of Entrepreneur and Entrepreneurship, Entrepreneur vs. Manager, Significance of Entrepreneurship in Economic Development; Characteristics/ Qualities of Entrepreneurs, Social Entrepreneurship, Entrepreneurial Ecosystem.

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Unit-II (CO2)	Start-up Idea generations and evaluation, Criteria to select a product, Conducting feasibility study
Unit-III (CO3)	Minimum Viable Product, Business plan, Sources of Finance for Entrepreneurship: Angle Funding, Venture Funding, Bank loans, Government funding schemes, Micro Finance.
Unit-IV (CO4)	Government initiatives for start-up support, Role of support bodies like NIESBUD, SIDBI, Incubators.
Unit-V (CO5)	Introduction to various forms of business organization (sole proprietorship, partnership, corporations, Limited Liability company), Registration formalities for startups.

* Other Learning Activities (for 30 hours) includes the following:

- End term Exam/ class tests/
- case studies/ simulation
- PPTs
- Career Counselling sessions
- Events/ Competitions/ Workshops/ Expert Lectures
- Business Plan development
- Social/ community work
- Entrepreneurial pitch

Suggested Readings:

1. Barringer, B. R., & Ireland, R. D. (2019). Entrepreneurship: Successfully Launching New Ventures. Pearson.
2. Burns, P. (2020). Entrepreneurship and Small Business: Start-Up, Growth and Maturity. Palgrave Macmillan.
3. Gupta, V. K., & Dutta, D. K. (2019). Entrepreneurship: Concepts, Theory, and Perspective. Springer.
4. Forbat John, "Entrepreneurship" 1st Edition, New Age International, 2008.
5. Havinal, Veerbhadrappa, "Management and Entrepreneurship", 1st Edition, New AgeInternational Publishers, 2008.
6. Prahlad, CK., Fortune at the Bottom of the Pyramid: Eradicating Poverty Through Profits, Ist Edition; Dorling Kindersley Ltd, 2006.

Semester 3

PROJECT MANAGEMENT

Course Credit: 04 (3-1-0)

Course Code: 24PMBA13 **Max. Marks: 100 (30I+70E)**

Course Objectives: The aim is to provide a suitable framework for looking insight into the process of preparation, appraisal, monitoring and control of a project. The course provides an understanding of the role of project management technique.

Learning Outcomes:

LO1. Understand the foundations of Project Planning & Management.
LO2. Make use of project management tools and templates for

business
LO3: Construct framework of projects and adapt project appraisal techniques for investment in projects.
LO4: Apply the project financing and implementation techniques in business

Unit	Topics
I LO 1	Concept of Project Preparation: Meaning and importance of Project; Types of project; Project life cycle; Project planning & implementation; Management action; Investment returns; Corporate strategy; Objectives of Project Planning, monitoring and control of investment projects. Project Preparation: Technical feasibility, estimation of costs, demand analysis and commercial viability, risk analysis, collaboration arrangements,
II LO 2	Project management tools, process, plans and project planning tips; balanced scorecard, design project management; Project Management Templates; Project management approaches: Traditional Approach, Critical Chain Project Management, Extreme Project Management, Event Chain Methodology; Process-based management; Project development stages; Project control systems
III LO 3	Project Management Framework; International Project Management Standards; Project Planning Strategies and Tools; Project Management Frameworks; Project Phases and Milestones; Project Goals; Project Processes.
IV LO 3	Project Appraisal: Business criterion of growth, liquidity and profitability, social cost benefit analysis in public and private sectors, investment criterion and choice of techniques: Estimation of shadow prices and social discount rate. Financial evaluation: Project rating index; Time Value of Money; Investment Criteria; Project Cash Flows; Cost of Capital; Project Risk Analysis; Project Rate of Return; Special Decisions Situations.
V LO 4	Project Financing and Implementation: Judgmental, Behavioral, Strategic and organizational Considerations; Financing of Project: Raising finance in domestic market and international market; Infrastructure financing; Tax planning while financing for projects; Implementation

Recommended Readings:

Shenhar, A. J., & Dvir, D. (2007). *Reinventing Project Management: The Diamond Approach to Successful Growth and Innovation.* Harvard Business School Publishing.

Chandra, P. (2014). *Projects: Planning analysis, selection, financing,implementation and review* (8^{th}ed.). McGrawHill.

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Clifford, F. G., & Larson, E. W. (2018). *Project management the managerial process.* (7th ed.). McGraw-Hill.

Clifford, F. G., & Larson, E. W. *Project management the managerial process with MS Project* (6th ed.). McGraw-Hill.

Mantel, S. J., Meredith, J. R., Shafer, S. M., & Sutton, M. M. (2011). *Project management* (4th ed.). John Wiley &Sons.

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SUMMER INTERNSHIP REPORT

Course Code: 24PMBA14

Course Credit: 4 (0-0-4)
Max. Marks: 100 (50I + 50E)

All the students will submit their Summer Training Reports (in duplicate) within one month; this period shall be counted from the last date of completion of their Summer Training. The supervisor in the organization under whose guidance the summer training is carried out will be required to grade the student's report in the format prescribed by the university. Each student will be attached with one internal faculty guide; with whom they shall be in continuous touch during the training period. The internal faculty guide and the external faculty guide will be required to evaluate (out of 50 marks each) based on the assessment report provided by the organization where the Summer Training has been completed and his/her assessment of the work done by the student.

List of tentative Electives in MBA (BA) 2nd Year

1	Econometrics	3	1	0	4
2	Business Analytics	3	1	0	4
3	Data Modeling	3	1	0	4
4	Financial Analytics	3	1	0	4
5	Marketing Analytics	3	1	0	4
6	People Analytics	3	1	0	4
7	Operations Analytics	3	1	0	4
8	Data and Text Mining	3	1	0	4
9	Financial Modeling	3	1	0	4
10	Machine Learning	3	1	0	4
11	Cloud Computing	3	1	0	4
12	Perspective Analytics	3	1	0	4

ECONOMETRICS

Course Credit: 04(3-1-0)

Course Code: 24PMBABA16

Max. Marks: 100(30I+70E)

Course Objectives:

To provide the basic knowledge of econometrics. While the course is ambitious in terms of its coverage of technical topics, equal importance is attached to the development of an intuitive understanding of the material that will allow these skills to be utilised effectively and creatively, and to give participants the foundation for understanding specialized applications through self-study with confidence when needed.

Learning Outcomes

Students who successfully complete the course:

1. Should be comfortable with basic statistics and probability.
2. Able to use a statistical/econometric computer package to estimate an econometric model and be able to report the results of their work in a non-technical and literate manner.
3. Able to estimate and interpret linear regression models and be able to distinguish between economic and statistical importance.
4. Able to critique reported regression results in applied academic papers and interpret the results

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for someone who is not trained as an economist.

Unit	Topics
I (LO 1)	Introduction: Nature and scope of Econometrics. Data-Types of data
II (LO 2)	Statistical Inference Normal distribution; chi-sq, t- and F-distributions-Estimation of parameters-Testing of hypotheses-Defining statistical hypotheses-Distributions of test statistics-Testing hypotheses related to population parameters Type-I and Type-II errors; Power of a test Tests for comparing parameters from two samples.
III (LO 3)	Simple Linear Regression Model: Two Variable Case Estimation of model by method of ordinary least squares-Properties of estimators Goodness of fit-Testing of Hypotheses-Scaling and units of measurement-Confidence intervals-Gauss Markov Theorem-Forecasting
IV (LO 3)	Multiple Linear Regression Model Estimation of parameters-Properties of OLS estimators-Goodness of fit- R^2 and Adjusted R^2 -Partial regression coefficients-Testing Hypotheses: Individual and Joint-Functional Forms of Regression Models-Qualitative (dummy) independent variables
V (LO 4)	Violations of Classical Assumptions: Consequences, Detection and Remedies Multicolinearity-Heteroscedasticity-Serial Correlation-Omission of a relevant variable Inclusion of irrelevant variable-Tests of specification

Recommended Books:

- D. N. Gujarati and D.C.Porter, Essentials of Econometrics, 4th Edition, McGraw Hill International Edition, 2010.
- Christopher Dougherty, Introduction to Econometrics, 4th edition, OUP, Indian edition, 2011.
- Jay L. Devore, Probability and Statistics for Engineers, Cengage Learning, 2010.
- John E. Freund, Mathematical Statistics, Prentice Hall, 2011.
- Irwin Miller and Marylees Miller, John E. Freund's Mathematical Statistics with Applications, 8th edition, Pearson.

BUSINESS ANALYTICS

Course Credit: 03(3-1-0)

Course Code: 24PMBABA17 **Max. Marks: 100(30I+70E)**

Course Objective

The course is to understand the management and administration, functions of management, formal and informal organization, staffing, creativity and innovation, process of communication. The objective of the course is partly to give an introduction to the software R and how to write elementary programs and partly to demonstrate how statistical models are implemented and applied.

Learning Outcomes

1. Evaluate the key concepts of business analytics
2. To integrate very large data sets to make business decisions
3. Recognise and make appropriate use of different types of data structures
4. Outline the relationship of the business analytics process within the organisation's
5. Decision-making process.
6. Examine and apply appropriate business analytic techniques and methods
7. To critically analyse the predictive analysis methods.
8. Design and write functions in R and implement simple iterative algorithms
9. Outlines the application of R in real world situations

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Unit	Topics
I (LO 1,2)	Definition of Business Analytics, Categories of Business Analytical methods and models, Business Analytics in practice, Big Data - Overview of using Data, Types of Data.
II (LO 2,3)	Over view of Description Statistics (Central Tendency, Variability), Data Visualization-Definition, Visualization Techniques – Tables, Cross Tabulations, charts, Data Dashboards using Ms-Excel or SPSS.
III (LO 3,4)	Predictive Analytics- Trend Lines, Regression Analysis –Linear & Multiple, Forecasting Techniques, Data Mining -Definition, Approaches in Data Mining-Data Exploration & Reduction, Classification, Association, Cause Effect Modelling.
IV (LO 5,6,7)	Prescriptive Analytics-Overview of Linear Optimization, Non Linear Programming Integer Optimization, Cutting Plane algorithm and other methods, Decision Analysis – Risk and uncertainty methods.
V (LO 8,9)	R Environment, R packages, Reading and Writing data in R, R functions, Control Statements, Frames and Subsets, Managing and Manipulating data in R.

Recommended Books

1. Camm, Cochran, Fry, Ohlmann, Anderson, Sweeney, Williams- Essentials of Business Analytics, Cengage Learning.

2. James Evans, Business Analytics, Pearson, Second Edition, 2017.

3. Albright Winston, Business Analytics- Data Analysis-Data Analysis and Decision Making, Cengage Learning, Reprint 2016.

4. Sahil Raj, Business Analytics, Cengage Learning.

Data Modeling

Course Credit: 04 (2-2-0)

Course Code: 24PMBABA18 **Max. Marks: 100 (30I+70E)**

Course Objective

The aim of the course is to make students learn and practice about data modelling using the entity relationship and developing database designs.

Learning Outcomes

LO1: Understand the fundamentals of database systems.
LO2: Design and draw ER and EER diagram for the real life problem. LO3: Apply normalization techniques to normalize the database.
LO4: Understand the needs of database processing and learn techniques for controlling the consequences of concurrent data access.
LO5: Convert conceptual model to relational model and formulate relational algebra queries.

Unit	Topics
I (LO 1, 2)	Data Modelling – meaning and concept – Data modelling objects – data modelling development cycle – Steps to create a data model – Data modeller role – model versioning – modelling standards – Data modelling reports – data modelling relationships – types.

II (LO 2, 3)	The Entity-Relationship Model; Data Modelling As Part of Database Design; Identifying Data Objects; Developing the Basic Schema; Refining the Entity-Relationship Diagram; Primary and Foreign Keys; Adding Attributes to the Model; Generalization Hierarchies; Adding Integrity Rules.
III (LO 3, 4)	Overview of the Relational Model: Data Structure and Terminology; Notation; Properties of Relational Tables; Relationships and Keys; Data Integrity; Relational Data Manipulation; Normalization; Advanced Normalization.
IV (LO 2, 4)	MS-Access Database- Screen Layouts; Creating Tables; Database Records; Table Relationship; Queries; Introduction to expression; Window Control and expression; Time series based functions; Forms; Reports; Importing, Exporting, and Linking.
V (LO 4, 5)	Transforming a logical data model into a physical model, including designing database-specific features and constraints. Explore the process of data modelling on modern development projects, including planning, continuous delivery, test driven development, continuous integration.

Recommended Books

1. Michel Berry and Gordon Linoff, Mastering Data mining, John Wiley and Sons Inc 2nd Edition, 2011.

2. Michel Berry and Gordon Linoff, Data mining techniques for Marketing, Sales and Customer support, John Wiley, 2011

3. G. K. Gupta, Introduction to Data mining with Case Studies, Prentice hall of India, 2011.

Financial Analytics

Course Credit: 04 (3-1-0)

Course Code: 24PMBAF04 **Max. Marks: 100 (30I+70E)**

Objective

This course shall provide hands on learning to students with financial data handling and utilizing the data for financial decision making. This course shall also emphasize on providing experience to students with developing models and checking their applications.

Learning Outcome

LO1: To analyse data and get equipped with its basic characteristics.
LO2: To learn cause and effect relationship and choice of models in appropriate way.
LO3: To understand volatile behaviour of financial data series and model accordingly. LO4: To establish co-movements between data series and forecasting data.

Unit	Contents
I LO1	**Basics of financial data & Visualization of Data and Trend :** Introduction to Financial Data, Understanding of Types of Data and sources of data, Descriptive Analysis, Trend Analysis & finance functions in excel, Econometric Models and their application
II LO2	**Time Series and Stationarity Test** Time series & its components, features of time series data, assumptions before modeling, log returns, stationarity tests/presence of unit root: ADF, PP, KPSS test, converting into stationary series.

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III LO3	**Univariate Analysis-ARIMA:** Univariate Analysis, usage of univariate series for projections and modeling, Forecasting of Time Series using ARIMA, Understanding of AR, MA, ARMA, ARIMA, understanding of Deterministic and Stochastic Models, ACF & PACF, Diagnostic Testing of ARIMA Models.
IV LO4	**Regression Analysis:** Basics of correlation and regression application on financial data, Bivariate and Multivariate Regression of Time Series (OLS model).
V LO1 LO4	**Volatility Models:** Assumptions of volatility models, univariate, bivariate and multivariate analysis ARCH, GARCH, DCC-GARCH, MGARCH, EGARCH, building Models using financial data.

Recommended Readings

- Damodar N. Gujarati, Dawn C. Porter, & Sangeetha Gunasekar [GUJ], *Basic Econometrics*, 5th Edition, McGraw-Hill, 2015.
- Ramu Ramanathan [RAM], *Introductory Econometrics with Applications,* 2nd Edition, Cengage, 2014.
- Chris Brooks [CB], *Introductory Econometrics for Finance,* 2nd Edition, Cambridge University Press, 2008.
- Makridakis, Spyros, Steven C. Wheelwright, and Rob J. Hyndman, [MAK], *Forecasting: Methods and Applications*, Third edition. John Wiley and Sons, 1998
- J. M. Woolridge *Introductory Econometrics- A Modern Approach,* 6th Edition, Cengage, 2009.
- Frank Fabozzi, Sergio M. Focardi, Svetlozar C. Rachev, Bala G. Arshanapalli [FAB], *The Basic Handbook of Financial Econometrics,* Wiley, 2014.
- Walter Enders [WE], *Applied Econometric Time Series*, 3rd Edition, Wiley India, 2010

Marketing Analytics

Course Credit: 04 (3-1-0)

Course Code: 24PMBAM04 **Max. Marks: 100 (30I+70E)**

Objective

The aim of the course is to make the students proficient in the marketing analysis and techniques and its application in the business environment. The course explores customer data analysis techniques and their theoretical foundations to help students acquire analytic skills that can be applied to real world marketing problems.

Learning Outcomes

LO1: Understand the use of marketing analytics in business
LO2: Use analytical tools for analysis and decision-making
LO3: Transform and translate data into insights
LO4: Apply the insights for business actions

Unit / CO	Course Content
Unit-I (CO1)	Introduction , Market Sizing and gaining Insight: Introduction to Marketing Analytics, Models and metrics; Advantages and applications of Marketing analytics;

	Market Sizing – Top down approach, bottom up approach, triangulation; Gaining insight using Pestel Analysis Porters five forces model
Unit-II (CO2)	Pricing Analytics and Forecasting:Pricing methods and Techniques; Price Elasticity demand curves; Pricing assessment Methods; Optimising Price; Value based pricing using conjoint analysis; Price Bundling; Forecasting- Regression to forecast sales Moving average method.
Unit-III (CO3)	Product and Service Analytics: Product and Service Metrics; Product analytics using Conjoint analysis; Customer life time value and marketing decision making Market Segmentation ;Segmentation using cluster analysis; Positioning using perceptual mapping
Unit-IV (CO4)	Distribution Analytics:Distribution Analytics; Retail Location Selection: Gravity Model and Huff Model; Channel Evaluation and Selection Distribution channel Metrics
Unit-V (CO5)	Promotion and Web Analytics: Promotional Budget estimation and Allocation Promotional Metrics ;Web Analytics Social media metrics and analytics Google ads metrics and analytics

Recommended Readings

- Predictive Analytics: The Power to Predict Who Will Click, Buy, Lie or Die (2016) – ISBN 978-1119145677 – Author: Eric Siegel, (Lt.Ed.).
- Gandomi, Amir and Murtaza Haider (2015). "Beyond the hype: Big data concepts, methods, and analytics" (Lt.Ed.).
- Allenby & Brazell, Seven Summits of Marketing Research: Decision-Based Analytics for Marketing's Toughest Problems, (Lt.Ed.).

People Analytics

Course Credit: 04 (3-1-0)

Course Code: 24PMBAHR06 **Max. Marks: 100 (30I+70E)**

Objective

The course aims to comprehend as to how HR and business leaders can take decisions about their people based on deep analysis of facts and data.

Learning Outcomes

LO1. Develop an understanding of the role and importance of HR analytics, and the ability to track, store, retrieve, analyse and interpret HR data to support decision-making.
LO2. Use applicable benchmarks/metrics to conduct research and statistical analyses related to Human Resource Management
LO3. Employ appropriate software to record, maintain, retrieve and analyse human resources information (e.g., staffing, skills, performance ratings and compensation information).
LO4. Apply quantitative and qualitative analysis to understand trends and indicators in human resource data; understand and apply various statistical analysis methods.

Unit	Topics
I (LO1)	Introduction to HR Analytics: Evolution of HR Analytics, HR information systems and data sources, Introduction to HR Analytics, People Analytics & Workforce Analytics; HR Analytics & the Organizational Structure; Types of Data; HR Analytics and Metrics, Case Discussion
II (LO1)	Diversity Analysis: Equality, diversity and inclusion; Workforce segmentation and search for critical job roles; Sentiment and trend analysis; Cost modelling; HR data warehousing; Decision tree; Case discussion - Heroes of the Taj
III (LO2)	Recruitment and Talent Acquisition, Talent Acquisition and Analytics Trend; Analytics for Efficiency; Analytics for Effectiveness; Metrics, segmentation and impact; Case Discussion; HRP & Resource Planning; Manpower Planning; Optimization of workforce; Lead Time Analysis
IV (LO3)	Predicting employee performance; Training requirements; evaluating training and development; Optimizing selection and promotion decisions; KPI vs metrics; Creating metrics
V (LO4)	Tracking impact interventions; Evaluating stress levels and value-change; Formulating evidence based practices and responsible investment; Evaluation mediation process, moderation and interaction analysis

Recommended Readings

- Edwards Martin R, Edwards Kirsten (Latest Edition), "Predictive HR Analytics: Mastering the HR Metric", Kogan Page Publishers, ISBN-0749473924
- Fitz-enz Jac (Latest Edition), "The new HR analytics: predicting the economic value of your company's human capital investments", AMACOM, ISBN-13: 978-0-8144-1643-3
- Fitz-enz Jac, Mattox II John (Latest Edition), "Predictive Analytics for Human Resources", Wiley, ISBN- 1118940709 Session Plan (please add rows and columns as per your course
- Predictive HR Analytics-Mastering the HR Metric, By: Martin R. Edwards & Kristen Edwards, Kogan Page, Latest Edition.
- Predictive Analytics for HR, By: Jac Fitz-Enz & John R. Mattox II, Wiley Publication, Latest

Operations Analytics

Course Credit: 04 (3-1-0)

Course Code: 24PMBABA19 **Max. Marks: 100 (30I+70E)**

Objective

The objective of the course is to make the students proficient in the field of operations analytics for formulating effective operations management strategies and decisions that serve the needs of the customers whilst maximizing overall profitability of an enterprise.

Learning Outcomes

LO1: Formulate, implement, and interpret practical operational analytics models in a computing environment.
LO2: Describe common concepts and tools used to support operational decision-making
LO3: Develop a multi-dimensional approach to problem solving/decision making
LO4: Hone analytical skills for effective critical appraisal of operations analytics

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Unit	Topic

I LO 1	**Fundamentals of Operations Analytics** Definition of Operations Analytics, Evolution of Operations Analytics, Operations Management Strategy, Operations Management Drivers, Operations Planning. Analytics in Operations Management, importance of Operations analytics in the flows involving material, money, information and ownership, Decision Domains in supply chain analytics, Application of Descriptive Analytics, Predictive Analytics and Prescriptive Analytics in a Supply Chain: An overview
II LO 2	**Descriptive Analytics in Operations Management** Data aggregation and data mining, insights regarding the company's production, financials, operations, sales, finance, inventory and customers. Applications of Bullwhip Effect and Time Series Analysis, Transportation problems and waiting line theory based problems in Operations.
III LO 3	**Predictive Analytics** Predictive Analytics and related technologies: Introduction to machine learning and cloud-based inventory management solutions, Applications in inventory management, pricing and maintenance, Forecasting using multiple characteristics in Demand Data and Inventory Management.
IV LO 3	**Prescriptive Analytics** Prescriptive analytics and scenario planning, scenario writing, Design of Logistics Network using Heuristics/optimization, Optimal Level of Product Availability in Supply chain, Using Excel Solver for Network Optimization, Network Design in Uncertain environment and Flexibility.
V LO 4	**Modelling and Operations Analytics** Introduction to Modelling, Approaches for Optimization and Simulation, Modelling software, Basics of Modelling, Supply chain applications using R, Trends, Challenges and Future of Supply Chain

Recommended Readings

- Drake, M. J. *The Applied Business Analytics Casebook: Applications in Supply Chain Management, Operations Management, and Operations Research.* Pearson Education. (Lt. Ed.)

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- Laursen, G. H., & Thorlund, J. *Business Analytics for Managers: Taking Business Intelligence Beyond Reporting*. John Wiley & Sons. (Lt. Ed.)
- Feigin, G. *Supply Chain Planning and Analytics: The Right Product in the Right Place at the Right Time.* Business Expert Press. (Lt. Ed.)
- Barlow, M. *Learning to Love Data Science: Explorations of Emerging Technologies and Platforms for Predictive Analytics, Machine Learning, Digital Manufacturing and Supply Chain Optimization.* O'Reilly Media, Inc. (Lt. Ed.)
- Plenert, G. *Supply chain optimization through segmentation and analytics.* CRC Press. (Lt. Ed.)

Data and Text Mining

Course Credit: 04 (3-1-0)

Course Code: 24PMBABA20 **Max. Marks: 100 (30I+70E) Objective**

The aim of the course is to make the students proficient in the data mining knowledge and techniques and its application in the business environment. This course will equip the students with abilities to solve the business problem by uncovering the usable information from the big datasets.

Learning Outcomes

LO1: Understand the fundamentals of a data-mining.
LO2: Apply data mining and its classification concepts to the real business problem
LO3: Understand the methods of data mining.
LO4: Make use of data mining algorithms for business application.
LO5: Data Mining application in detection & prevention of the intrusion and abnormality.

Unit	Topic
Unit I LO1	**Data Mining:** Meaning and concept; Requirement for Data Mining; Parameters & Functionalities of Data Mining; Data Mining system & its classification; advantages & disadvantages of data mining.
Unit II LO2	**Data Mining:** Statistical Perspective; Data processing and pre-processing; Data Cleaning: Missing data, Noisy Data; Process of Data Mining; Application of data mining to business; Introduction of Data Mining Tasks- Classification, Clustering, Association, Abnormality Detection.
Unit III LO3	**Data Mining Classification:** Decision Tree based, Rule based, Instance- based approaches and application on predication & recommend-er system; Clustering: Partitional & Hierarchical Methods, Graph-based Methods, Density-based Methods; Validation Applications to Business.
Unit IV LO4	**Data Mining Association:** "Apriori Algorithm & Extensions- Association Pattern Evaluation- Sequential Patterns and Frequent Subgraph Mining,Parallel & distributed algorithm, understanding results, Business Applications.
Unit V LO5	**Abnormality**: Uncovering using statistical & Density based techniques; Risk involved & ethical consideration in Data Mining, privacy "what can/do firms know"? Big Data Analytics in "Mobile Environments", "Detecting & preventing Fraud using Data Mining Techniques".

Recommended Readings

- Michel B., Gordon L., *Mastering Datamining,* John Wiley and Sons Inc (Latest Edition)
- Shmueli P. Bruce, Data Mining for Business Intelligence: Concepts, Techniques, and

Applications in Microsoft Office Excel with XLMiner, John Wiley & Sons, (Latest Edition)
- Miche.B, Gordon L., Data mining techniques for Marketing, Sales and Customer support, John Wiley, (Latest Edition)
- G. K. Gupta, Introduction to Data mining with Case Studies, Prentice hall of India, (Latest Edition)
- Pang-Ning T., Michael S., Vipin K., Introduction to Data Mining, Pearson Education India, (Latest Edition).

Financial Modeling

Course Credit: 04 (3-1-0)

Course Code: 24PMBABA21 **Max. Marks: 100 (30I+70E)**

Objectives

In the course, the participants will learn the model building skills required to build powerful models in finance. In the course we will also emphasize on the different model building skills that one should have irrespective of the final use that one is going to make of it.

Learning Outcomes

LO1. Understand how to build models in excel to suit one's purpose
LO2. Building models in different areas of finance including investments, corporate finance and derivatives
LO3. Identifying and controlling the key sensitivities with advanced spreadsheet simulation
LO4. Understand how risk can be built into the model to enhance decision making process

Unit	Topic
I LO1	**Introduction to Modelling:** Basics of financial modeling, spreadsheets, excel functions in finance domain, formatting of Excel Sheets, Data Filter and Sort, Charts and Graphs.
II LO2	**Analysis of Financial Statements in Excel:** Introduction to Financial Statement Analysis, Understanding Income Statement, Balance Sheet, Cash Flow Statement, Financial Analysis Techniques
III LO3	**Financial Ratios and analysis in Excel:** Ratio analysis of industries, Du point Analysis, Peer to peer analysis, Preparation of Financial Analysis report on an industry.
IV LO4	**Business Finance Models:** Time value of money, Cost of capital, Project evaluation; stages of projects and its analysis, Cash flow analysis, discounted valuation techniques.
V LO5	**Equity Research and Portfolio Valuation:** Equity returns, portfolio returns, risk analysis, portfolio weights, portfolio evaluation, portfolio analysis and revision with models like Markowitz, Sharpe, Jensen, Treynor ratios.

Recommended Readings

1. Advanced Financial Accounting, TAN, McGraw Hill. (Latest Edition)
2. Financial Modelling, Simon Benninga. (Latest Edition)
3. Financial Analysis and Modeling using Excel and VBA, Chandan Sengupta. (LatestEdition)

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Machine Learning

Course Credit: 04 (3-1-0)

Course Code: 24PMBABA22 **Max. Marks: 100 (30I+70E)**

Objective

The objective of the course is to introduce various methods from the domains of machine learning and optimization that will be useful to make business decisions when faced with large amount of data

Learning Outcomes

LO1. Handle data using Python and R and to Perform task of classification and predictive modeling
LO2. Understand the use of machine learning tools for data analysis and optimization libraries
LO3. Construct a solutionsusing models for business decision making
LO4. Classify and solve challenging problemsusing ML models

Unit	Topic
I LO 1	**Introduction to Python:** Data structures in python; Control structures & functions- Pandas basics -Indexing and selecting data- Grouping and summarizing data frames- Reading delimited and relational databases - Reading data from websites- Getting data from API's- Numpy basics - Creating numpy arrays - Structure and content of arrays-Introducing Scientific Computing with Python SciPy- Basics of visualization- Plotting categorical and time-series data - Plotting data distributions- Hand on practice
II LO 1	**Basics of R:** Data structures and programming constructs in R- Introduction to packages in R -Data frame manipulation in R-Data cleaning in R- Fundamentals of Data Visualizationwithggplot2- Hands-on practice
III LO 2	**Introduction:** Machine Learning Foundations –Overview –applications - Types of machine Learning- Descriptive statistics -Linear Models for Regression - Linear Basis Function Models-The Bias-Variance Decomposition–Bayesian Linear Regression - Bayesian Model Comparison
IV LO 3	**Supervised and Unsupervised Learning:** Discriminant Functions-Logistic Regression. Decision Trees- Neural Networks -Feed-forward Network Functions - Error Backpropagation -Clustering- K-means - Expectation Maximization - Mixtures of Gaussians -Model selection for latent variable models - high dimensional spaces - The Curse of Dimensionality – Dimensionality Reduction - Factor analysis – Independent components analysis- Bagging-Boosting
V LO 4	**Reinforcement Leaning:** Naive Bayes Classifiers-Markov Models – Hidden Markov Models – Inference – Learning Generalization –Conditional random fields - Structural Support vector machines- K-Armed Bandit- Elements-Model Based Learning Value Iteration- Policy Iteration. Temporal Difference Learning- Computational Learning – Text Mining

Recommended Readings

- Machine Learning (in Python and R) For Dummies. John Paul Mueller, Luca Massaron, Wiley (Latest Edition)

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- Introduction to Machine Learning with Python: A Guidefor Data Scientists by Andreas C. Mueller, Sarah Guido, O'Reilly Publishers. (Latest Edition)
- Machine Learning using Python by U Dinesh Kumar Manaranjan Pradhan, Wiley. (Latest Edition)
- https://www.youtube.com/watch?v=rfscVS0vtbw
- https://www.youtube.com/watch?v=WGJJIrtnfpk
- https://www.youtube.com/watch?v=TGo9F0QyBuE

Cloud Computing

Course Credit: 04 (3-1-0)

Course Code: 24PMBABA23 **Max. Marks: 100 (30I+70E)**

Objective

The aim of the course is to understand the current trend and basics of cloud computing which will help students to cloud services from different providers and ways of collaborations.

Learning Outcome

LO1: Remember and technologies in cloud computing
LO2: Knowledge about the services and security of cloud computing
LO3: Design and Implementing cloud computing for the corporation.
LO4: Understand and able to collaborate the cloud services to any device.

Unit	Topic
I LO1	Cloud Computing; Advantages of Cloud Computing; Disadvantages of Cloud Computing; Characteristics and benefits of the cloud, Traditional IT vs Cloud-based IT
II LO2	Public, Private, Hybrid, and Community Cloud, Suitability for different business sizes and industries, Cloud in CRM, HR, Finance, and Supply Chain
III LO3	Organisational Readiness for Cloud, Components of a cloud computing architecture; Collaborating on Calendars, Schedules, Event Management, Word Processing, Storing and Sharing Files; Designing Cloud Based Business Solutions
IV LO4	Emergent trends in cloud computing; Collaborating via Web-Based Communication Tools; Evaluating Web Mail Services; Web Conference Tools; Collaborating via Social Networks and Groupware; Collaborating via Blogs and Wikis
V LO1, LO2	Cyber Threats in Cloud Computing, Application Security Web Application, Attack methods, Web Application Security, Application Security Layer, Security Solutions

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Recommended Readings

- Mulholland, Andy, Pyke, Jon, and Finger, Peter; Enterprise Cloud Computing: a strategy guide for business and technology leaders; Meghan Kiffer Press (Lt. Ed.)

- Linthicum, David S.; Cloud Computing and SOA Convergence in your Enterprise: A StepbyStep Guide; Addison Wesley Information Technology Series. (Lt. Ed.)
- Rhoton, John; Cloud Computing Explained: Implementation Handbook for Enterprises; Kindle Edition. (Lt. Ed.)
- Reese, George; Cloud Application Architectures: Building Applications and Infrastructure in the Cloud; O'reilly publication. (Lt. Ed.)
- Cloud Computing: Principles and Paradigm-RajkumarBuyya, James Broberg, AndrzejGoscinki (Wiley) (Lt. Ed.)

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- Michael Miller, Cloud Computing: Web-Based Applications That Change the Way You Work and Collaborate Online, Que Publishing, August 2008. (Lt. Ed.)
- Kumar Saurabh, "Cloud Computing – Insights into New Era Infrastructure", Wiley Indian Edition, 2011. (Lt. Ed.)
- Haley Beard, Cloud Computing Best Practices for Managing and Measuring Processes for Ondemand Computing, Applications and Data Centers in the Cloud with SLAs, Emereo Pty Limited, July 2008. (Lt. Ed.)

Perspective Analytics

Course Credit: 04 (3-1-0)

Course Code: 24PMBABA24 **Max. Marks: 100 (30I+70E)**

Objective

The aim of the course is to enhance students' ability to obtain actionable decisions in business employing mathematical modelling and simulation in Prescriptive Analytics

Learning Outcomes

LO1: Understand how various models are constructed and how prescriptive models can improve business decision making
LO2: Analyse solutions applying mathematical modelling and simulation to look beyond simple solutions of models
LO3: Identify typical and new problems in different business settings.
LO4: Use mathematical modelling tools for conducting business analysis.

Unit	Topic
I LO 1	Introduction to Perspective Analytics; Introduction to Operations Research/Management Science/Business Analytics, An Introduction to Linear Programming: Graphical method; Linear Programming (Sensitivity Analysis, Budget Allocation, Scheduling, DEA); Application of LPP models using Excel Solver.
II LO2	Nonlinear Programming (Pricing, Facility Location, Portfolio Selection); Integer Programming (Logical constraints, Project Selection, Set Covering)
III LO2	Network Models (Transportation, Logistic, Supply Chain, Bidding, Shortest Path); Decision Tree analysis; Dynamic Programming; Markov Processes
IV LO 3	Multi-criteria decision making (MCDM) techniques: Goal Programming (GP) and analytic hierarchy process (AHP) and applications of GP and AHP in solving problems with multiple objectives.
V LO 4	Simulation Modelling; Game theory; Machine Learning integrated with Modelling; Review of Data Partitioning, Dimension Reduction, Over Fitting, Over Sampling; Logistic Regression and Artificial Neural Networks; Classification (K- NN, DA) and Clustering (K-means)

Software used will include Excel, SAS; Lingo, Management Scientist and IBM CPLEX.

Recommended Readings

- Business Analytics: Data Analysis & Decision Making, 6E, Cengage Publication, Author(s): S. Christian Albright | Wayne L. Winston. (Lt. Ed.)
- H.P. Williams (2013). Model Building in Mathematical Programming, fifth edition, Wiley. (Lt. Ed.)
- Bertsimas, D., & Tsitsiklis, J. N. (1997). Introduction to linear optimization. Belmont, MA: Athena Scientific. (Lt. Ed.)
- Chen, D. S., Batson, R. G., & Dang, Y. (2011). Applied integer programming: modeling and solution. John Wiley & Sons. (Lt. Ed.)
- S. P. Bradley, A. C. Hax, and T. L. Magnanti (1977). Applied Mathematical Programming, Addison-Wesley. (Lt. Ed.)

Semester 4

Human Values and Professional Ethics

Course Credit: 02(0-1-0)
Course Code: 24UHPE01
Max. Marks: 100(30I+70E)

Objectives: The course aims to inculcate core human values and professional ethics in the learners to guide them in developing a strong sense of ethics and values that can help them navigate their chosen profession with integrity and responsibility.

Learning Outcomes: After completing this course, the learns will be able to

• Understand of Human values to interact and connect with the outer world in a peaceful manner (Yama).

• To exhibit Professional Ethics at working place.

• Ability to work in team with human values and professional ethics.

• Appreciate the essential complementarity between 'VALUES' and 'SKILLS' to ensure sustained happiness and prosperity.

• UNIT I

• Human Values-1: Values: Understanding values, Types of values, Role of tracking values for individual & social wellbeing. • Integrity, Trustworthiness, Honesty, Courage, Love and Compassion, non-violence, Renunciation, Righteousness • Co-operation: -Understanding cooperation and significance of cooperation, Team work, Cohesion of Self-Family-Society.

• UNIT II • Human Values-2: Empathy, Emotional Intelligence– Emotional Competencies – Conscientiousness. • Self-confidence, Spirituality, Character. • Truthfulness: Understanding truthfulness, need for truthfulness and role of truthfulness in relationship and social interaction. • Customs and Traditions -Value Education – Human Dignity – Human Rights – Fundamental Duties.

• UNIT III • Professional Ethics aiming at excellence and Harmony: Value Based Life and Profession, Professional Ethics and Right Understanding, Competence in Professional Ethics, Issues in Professional Ethics. • Integrity, Trusteeship, Harmony, Accountability, Inclusiveness, Commitment, Respectfulness, Belongingness, Sustainability 18

• UNIT IV Professional Ethics: Global Prospective: • Globalization and MNCs –Cross Culture Issues, • Business Ethics, Media Ethics, Environmental Ethics, Bio Ethics, Computer Ethics, War Ethics

• UNIT V Duties and Rights in Profession: • Concept of Duty, Professional Duties, Consensus and Controversy • Professional and Individual Right, • Conflict of Interest-Ethical egoism, • Gifts and Bribes, Plagiarism

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Recommended Readings: 1. Alavudeen, A, R. Kalil Rahman, and M. Jayakumaran. Professional Ethics and Human Values. Laxmi Publications, 2015. 2. Banerjee, B P. Foundation of Ethics and Management. Excel Books, 2005. 3.

Gaur, R, R, R. Sangal, and G.P. Bagaria. A Foundation Course in Human Values and Professional Ethics. Excel Books, 2010. 4. Hugman, Richard. New Approaches in Ethics for the Caring Professions: Taking Account of Change for Caring Professions. Red Globe Press, 2005. 5. Hugman, Richard, and Carter Jan. Rethinking Values and Ethics in Social Work. Ney York: Red Globe Press, 2017. 6. Titus, Smith and Nolan. Living Issues in Philosophy. Oxford University Press, 1995.

Research Project

Course Credit: 06(0-0-6)
Course Code: 24PMBA15
Max. Marks: 200(100I+100E)

Students will undergo a research project based on business analytics domain in second year of program. Each student shall be assigned a faculty supervisor and he/she will present the research work at a seminar/conference. Viva shall take place based on the final report submitted by the students to their respective supervisors.

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