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**MBA (BUSINESS ANALYTICS) SECOND YEAR**

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UNIVERSITY, UTTAR PRADESH, LUCKNOW



EVALUATION SCHEME & SYLLABUS

FOR

**MBA (BUSINESS ANALYTICS) SECOND YEAR**

AS PER

AICTE MODEL CURRICULUM

[Effective from the Session: 2021-22]

### **Preamble**

Business analytics is a powerful tool in today's marketplace. Across industries, organizations are generating vast amounts of data which, in turn, has heightened the need for professionals who know how to interpret and analyze that information.

The research also shows that, over the next three years and beyond, 71 percent of global enterprises predict their investments in analytics will accelerate. In light of this trend, gaining an in-depth understanding of business analytics can be a way to advance your career and make better decisions at the workplace.

The syllabus is created keeping in mind that by 2021-22, over seven billion people and businesses and at least 30 billion devices will be connected to the internet. With people, businesses and things communicating, transacting, and even negotiating with each other, a new world with humongous data is generated. Taking business decisions based on data and IoT is the order of the day

Therefore, the overall structure of second year of the program is developed to provide students with the fundamental knowledge and equips them with a range of transferable skills which can be a potential value to future employers. The subjects are chosen in such a way that will give a comprehensive understanding of the varied concepts and theoretical frameworks required for being a business data analytics in most of the area of management functions.. This will be able to have a better capacity to think, observe, assess and critically analyze career interest & map with career opportunities in a real time world of business.

### **Summer Training Project Report**

At the end of the second semester examination, it is mandatory for every student of MBA (Business Analytics) to undergo on-the-job practical training in any manufacturing, service or financial organization. The training will be of 6 to 8 weeks duration. The college/institute will facilitate this compulsory training for students.

2. During the training, the student is expected to learn about the organization and analyse and suggest solutions to a live problem. The objective is to equip the students with the knowledge of actual functioning of an organization and problems faced by them for exploring feasible solutions.

3. During the course of training, the organization (where the student is undergoing training) will assign a problem/project to the student.

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4. The student, after the completion of training will present the work to his / her faculty guide / mentor. Guide will assess student's contribution and will award internal marks out of 50. Thereafter students will submit a report to the College/Institute which will form part of the third semester examination. However, the report must be submitted by the end of October 30.
5. The report (based on training and the problem/project studied) prepared by the student will be known as Summer Training Project Report. The report should ordinarily be based on primary data. It should reflect in depth study of a micro problem, ordinarily assigned by the organization where the student undergoes training. Relevant tables and bibliography should support it. One comprehensive chapter must be included about the organization where the student has undergone training. This should deal with brief history of the organization, its structure, performance products/services and problem faced. This chapter will form part 1 of the report. Part 2 of the report will contain the study of micro research problem. The average size of report ordinarily will be of minimum 100 pages in standard font size (12) and double spacing. Two neatly typed (one sided only) and soft bound copies of the report will be submitted to the College/Institute. The report will be typed on A-4 size paper.
6. The report will have two certificates, one by the Head of the Department, another by the Faculty guide and third one from reporting officer of the organization where the student has undergone training. These three certificates should be attached in the beginning of the report.
7. The Summer Training Project Report will carry 100 marks and will be evaluated by two examiners (external and internal). The evaluation will consist of (1) Project Report evaluation (2) Project Presentation and Viva Voce. The average of the marks awarded by the 2 examiners will be taken into account for the results. In case the difference in the awards given by the examiners is 30 or more marks, the project report will be referred to a third examiner. Only such person will evaluate the project report who has minimum three years of experience of teaching MBA (Business Analytics) classes in a College/University. Experience of teaching MBA (Business Analytics) classes as guest faculty shall not be counted.
8. The parameters on which external evaluation would be carried out are as under:

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### Project Report Evaluation:

| Evaluation Criteria | Understanding of Objectives with topic (20) | Understanding Of Reliance of topic (20) | Interpretation & Analysis (20) | Presentation (20) | Query handling (20) |
|---------------------|---|---|--------------------------------|-------------------|---------------------|
|---------------------|---|---|--------------------------------|-------------------|---------------------|

9. It is mandatory that the student will make presentation in the presence of teachers and students. The student is expected to answer to the queries and questions raised in such a meeting.

10. The student shall prepare the Summer Training Project Report as per the format given in the Summer Training Manual as prescribed by the University

### **RESEARCH PROJECT REPORT (RPR)**

In fourth semester, the candidates will have to submit a Research Project Report on a problem/topic (from the specialization areas) to be assigned by the MBA department under the supervision of a core faculty member of the department.

1. The Research Project Report will carry 150 marks.
2. The evaluation of the project report will be done by two examiners (external & internal). The evaluation will consist of (1) Evaluation of Project Report (2) Presentation and Viva Voce.
3. The evaluation of Project Report will comprise of 50 marks and would be evaluated by the internal guide.
4. The evaluation of Viva Voce of Project would comprise of 100 marks and would be evaluated by two examiners (1 external and 1 internal). The average of the marks awarded by the 2 examiners will be taken into account for the results. In case the difference in the marks given by the examiners is 30 or more, the project report will be referred to a third examiner. In such cases the average of two closer awards (given by three examiners) will be taken into account for the results.
5. The report will contain the objectives and scope of the study. Research Methodology, use and importance of the study, analysis of data collected, conclusions and recommendations. It will contain relevant charts, diagrams and bibliography. A certificate of the supervisor and the Head of the MBA program certifying the authenticity of the report shall be attached

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therewith. The student will submit two copies of the report to the Head of MBA program. The number of pages in the report will be minimum 75 or more. The report should be typed in A-4 size paper. The parameter on which both evaluation (1 & 2) would be carried on would be on the basis of:

### **The scheme of evaluation for Project Report**

| Criteria & Marks | Relevance of Objectives with topic (10) | Relevance of Research Methodology(20) | Interpretation & Analysis (20) | Total (50) |
|------------------|---|---------------------------------------|--------------------------------|------------|
|                  |   |                                       |                                |            |

### **The scheme of evaluation of Viva voce**

| Evaluation Criteria and Marks | Understanding of Objectives with topic (20) | Understanding of the relevance of Research (20) | Interpretation & Analysis (20) | Presentation & Communication skills (20) | Query Handling (20) | Total (100) |
|-------------------------------|---|---|--------------------------------|--|---------------------|-------------|
|                               |   |   |                                |  |                     |             |

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## MBA (Business Analytics)

**II Year Scheme of Teaching & Evaluation for Session 2021-22**  
**(In accordance with AICTE Model Curriculum & New Education Policy)**

### Semester III

| SNo                   | Codes    | SUBJECT                                    | PERIODS |   |   | INTERNAL EVALUATION SCHEME |    |    |       | END SEMESTER EVALUATION |      | TOTAL | CREDIT |
|-----------------------|----------|--|---------|---|---|----------------------------|----|----|-------|-------------------------|------|-------|--------|
|                       |          |  | L       | T | P | CT                         | TA | PS | TOTAL | TE                      | PE   |       |        |
| 1                     | KMBA 301 | Strategic Management                       | 4       | 0 | 0 | 30                         | 20 | 0  | 50    | 100                     | 0    | 150   | 3      |
| 2                     | KMBA 302 | Artificial Intelligence & Machine Learning | 4       | 0 | 0 | 30                         | 20 | 0  | 50    | 100                     | 0    | 150   | 3      |
| 3                     | KMBA 303 | Human Value And Professional Ethics        | 3       | 1 | 0 | 30                         | 20 | 0  | 50    | 100                     | 0    | 150   | 3      |
| 4                     | KMBA 304 | Supply Chain Analytics                     | 4       | 0 | 0 | 30                         | 20 | 0  | 50    | 100                     | 0    | 150   | 3      |
| 5                     | KMBA 305 | Marketing Analytics                        | 4       | 0 | 0 | 30                         | 20 | 0  | 50    | 100                     | 0    | 150   | 3      |
| 6                     | KMBA 306 | Summer Training Project Report & Viva Voce | 0       | 2 | 0 | 0                          | 50 | 0  | 50    | 0                       | 100  | 150   | 4      |
| <b>LAB/PRACTICALS</b> |          |  |         |   |   |                            |    |    |       |                         |      |       |        |
| 7                     | KMBA 351 | Business Modeling with Spreadsheets        | 1       | 0 | 3 | 0                          | 0  | 50 | 50    | 0                       | 100  | 150   | 3      |
| 8                     | KMBA 352 | Machine Learning using "PYTHON"            | 1       | 0 | 3 | 0                          | 0  | 50 | 50    | 0                       | 100  | 150   | 3      |
|                       |          |  |         |   |   |                            |    |    |       |                         | 1200 | 25    |        |

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### Semester IV

| SNo | Codes    | SUBJECT  | PERIODS |   |   | INTERNAL EVALUATION SCHEME |    |    |       | END SEMESTER EVALUATION |     | TOTAL | CREDIT |
|-----|----------|--|---------|---|---|----------------------------|----|----|-------|-------------------------|-----|-------|--------|
|     |          |  | L       | T | P | CT                         | TA | PS | TOTAL | TE                      | PE  |       |        |
| 1   | KMBA 401 | Emerging Technologies in Global Business Environment | 4       | 0 | 0 | 30                         | 20 | 0  | 50    | 100                     | 0   | 150   | 3      |
| 2   | KMBA 402 | HR Analytics   | 4       | 0 | 0 | 30                         | 20 | 0  | 50    | 100                     | 0   | 150   | 3      |
| 3   | KMBA 403 | Social Media & Web Analytics                         | 4       | 0 | 0 | 30                         | 20 | 0  | 50    | 100                     | 0   | 150   | 3      |
| 4   | KMBA 404 | Healthcare Analytics                                 | 4       | 0 | 0 | 30                         | 20 | 0  | 50    | 100                     | 0   | 150   | 3      |
| 5   | KMBA 405 | Business Applications of Block chain Technologies    | 4       | 0 | 0 | 30                         | 20 | 0  | 50    | 100                     | 0   | 150   | 3      |
| 6   | KMBA 406 | Data base management system                          | 4       | 0 | 0 | 30                         | 20 | 0  | 50    | 100                     | 0   | 150   | 3      |
| 7   | KMBA 407 | Financial and Credit Risk Analytics                  | 4       | 0 | 0 | 30                         | 20 | 0  | 50    | 100                     | 0   | 150   | 3      |
| 8   | KMBA 408 | Research Project Report & Viva Voce                  | 0       | 2 | 0 | 0                          | 50 | 0  | 50    | 0                       | 100 | 150   | 4      |
|     |          |  |         |   |   |                            |    |    |       |                         |     | 1200  | 25     |

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## STRATEGIC MANAGEMENT

Code: KMBA 301

Course Credit: 3

Contact Hours: 36 hours

### Course Objectives

1. A clear understanding of the key concepts and principles of strategic management
2. A set of useful analytical skills, tools and techniques for analyzing a company strategically
3. To provide a basic understanding of the nature and dynamics of the strategy formulation and implementation processes.
4. To encourage students to think critically and strategically.
5. The ability to identify strategic issues and design appropriate courses of action.

### UNIT 1 (5 Hours)

**Introduction:** meaning nature, scope, and importance of strategy; Model of strategic management, Strategic Decision Making Process.

**Corporate Governance:** Composition of the board, Role and Responsibilities of the board of directors, Trends in corporate governance, Corporate Social Responsibility

### UNIT 2 (8 hours)

**Environmental Scanning:** *Understanding the Macro Environment:* PESTEL Analysis, Industrial Organization (IO) & the Structure Conduct Performance (SCP) approach, Porter's Five Forces Model, *Understanding the Micro Environment:* Resource Based View (RBV) Analysis, VRIO Framework, Using resources to gain Competitive advantage & its sustainability, Value Chain Analysis

### UNIT 3 (9 hours)

**Strategy Formulation:** Situational Analysis using SWOT approach

**Business Strategies:** Competitive **Strategy:** - Cost Leadership, Differentiation & Focus, Cooperative **Strategy:** - Collusion & Strategic Alliances

**Corporate Strategies:** Directional **Strategy:** Growth strategies, Stability Strategies & Retrenchment Strategies. Corporate Parenting

**Functional Strategies:** Marketing, Financial, R&D, Operations, Purchasing, Logistics, HRM & IT. *The sourcing decision:* Outsourcing & offshoring

### Unit 4 (9 hours)

**Strategy Choice and Analysis:** Scenario Analysis Process, Tools & Techniques of strategic Analysis: BCG Matrix, Ansoff Grid, GE Nine Cell Planning Grid, McKinsey's 7'S framework

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**Strategy implementation:** Developing Programs, Budget and Procedures, Stages of Corporate Development, Organizational Life cycle, *Organizational Structures:* Matrix, Network & Modular/Cellular; Reengineering and Strategy implementation, Leadership and corporate culture,

### Unit 5 (5 hours)

**Strategy Evaluation & Control:** Evaluation & Control process, *Measuring performance:* types of controls, activity based costing, enterprise risk management, primary measures of corporate performance, balance scorecard approach to measure key Performance, responsibility centers, Benchmarking, Problems in measuring Performance & Guidelines for proper control. Strategic Audit of a Corporation

### Course Outcome

After successful completion of this course students will be able to

| Course Outcome  | Bloom's Taxonomy |
|---|------------------|
| <b>CO1.</b> Formulate organizational vision, mission, goals, and values.  | Apply (K3)       |
| <b>CO2.</b> Develop strategies and action plans to achieve an organization's vision, mission, and goals.  | Create (K6)      |
| <b>CO3.</b> Develop powers of managerial judgment, how to assess business risk, and improve ability to make sound decisions and achieve effective outcomes. | Create (K6)      |
| <b>CO4.</b> Evaluate and revise programs and procedures in order to achieve organizational goals;   | Evaluate (K5)    |
| <b>CO5.</b> Consider the ethical dimensions of the strategic management process;  | Analyze (K4)     |

### Suggested Readings

1. Wheelen, L. Thomas and Hunger, David J.; Concepts in Strategic Management and Business Policy, Pearson Education,
2. Stewart Clegg, Chris Carter, Martin Kornberger & Jochen Schweitzer : Strategy - Theory and Practice 3<sup>rd</sup> Ed.(SAGE Publishing India)
3. Kazmi, Azhar; Business Policy and Strategic Management; McGraw-Hill Education. David, Fred; Strategic Management: Concepts and Cases; PHI Learning.
4. Thomson, Arthur A. and Strickland, A. J.; Strategic Management: Concept and Cases; McGraw Hill Education,
5. Jauch, L.F., and Glueck, W.F.; Business Policy and Strategic Management; McGraw-Hill Education,

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## AI AND MACHINE LEARNING FOR BUSINESS

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Code: KMBA 302

Course Credit: 3

Contact Hours: 36 hours

### Course Objectives:

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

### UNIT 1 Artificial Intelligence for Business Planning (4 Hours)

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.

### UNIT 2; Supervised Learning and Applications (8 Hours)

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.

### UNIT 3: Unsupervised Learning algorithms (8 Hours)

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

### UNIT 4: Artificial Neural Networks & Deep Learning (8 hours)

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

### UNIT 5: Reinforcement Learning– (8 Hours)

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.

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### Reference Books

1. Artificial Intelligence for Business Leaders: Ajit Kr. Jha
2. Machine Learning in Business: John C. Hull
3. An Introduction to Statistical Learning with Applications in R : James, G., Witten, D., Hastie, T., Tibshirani, R. (Springer)
4. Artificial Intelligence Business Applications: How to Learn Applied Artificial Intelligence and Use Data Science for Business. Includes Data Analytics, Machine Learning for Business and Python : William J Ford
5. AI and Machine Learning: Was Rahman, SAGE Publishing India

| <b>Course Outcome (CO)</b>                         |   | <b>Bloom's Knowledge Level (KL)</b> |
|--|---|-------------------------------------|
| At the end of course, the student will be able to: |   |                                     |
| <b>CO1</b>   | To understand the need of Machine Learning & Statistics for solving various problems. | <b>K1,<br/>K2</b>                   |
| <b>CO2</b>   | To understand the basic concepts of Supervised and Unsupervised learning.             | <b>K1,<br/>K3</b>                   |
| <b>CO3</b>   | To apply regression analysis on the data available.                                   | <b>K2,<br/>K3</b>                   |
| <b>CO4</b>   | To design appropriate machine learning and apply on real world problems               | <b>K2,<br/>K3</b>                   |
| <b>CO5</b>   | To optimize different Machine Learning & Deep Learning Techniques                     | <b>K3</b>                           |

## UNIVERSAL HUMAN VALUES AND PROFESSIONAL ETHICS

**Code: KMBA303**

Credits: 3

Contact Hours: 36 hours

### **Objectives:**

1. To help students distinguish between values and skills, and understand the need, basic guidelines, content and process of value education.
2. To help students initiate a process of dialog within themselves to know what they 'really want to be' in their life and profession
3. To help students understand the meaning of happiness and prosperity for a human being.
4. To facilitate the students to understand harmony at all the levels of human living, and live accordingly.
5. To facilitate the students in applying the understanding of harmony in existence in their profession and lead an ethical life

**Course Outcome:** On completion of this course, the students will be able to

1. Understand the significance of value inputs in a classroom, distinguish between values and skills, understand the need, basic guidelines, content and process of value education, explore the meaning of happiness and prosperity and do a correct appraisal of the current scenario in the society
2. Distinguish between the Self and the Body, understand the meaning of Harmony in the Self the Co-existence of Self and Body.
3. Understand the value of harmonious relationship based on trust, respect and other naturally acceptable feelings in human-human relationships and explore their role in ensuring a harmonious society
4. Understand the harmony in nature and existence, and work out their mutually fulfilling participation in the nature.
5. Distinguish between ethical and unethical practices, and start working out the strategy to actualize a harmonious environment wherever they work.

### **Catalogue Description**

Every human being has two sets of questions to answer for his life: a) what to do? and, b) how to do?. The first set pertains to the value domain, and the other to the skill domain. Both are complimentary, but value domain has a higher priority. Today, education has become more and more skill biased, and hence, the basic aspiration of a human being, that is to live with happiness and prosperity, gets defeated, in spite of abundant technological progress. This course is aimed at giving inputs that will help to ensure the right understanding and right feelings in the students in their life and profession, enabling them to lead an ethical life. In this course, the students learn the process of self- exploration, the difference between the Self and the Body, the naturally acceptable feelings in relationships in a family, the comprehensive human goal in the society, the mutual fulfillment in the nature and the co- existence in existence. As a natural outcome of such inputs, they are able to evaluate an ethical life and profession ahead.

### UNIT-1 **Course Introduction - Need, Basic Guidelines, Content and Process for Value Education**

Understanding the need, basic guidelines, content and process for Value Education, Self-Exploration–what is it? - its content and process; ‘Natural Acceptance’ and Experiential Validation- as the mechanism for self-exploration, Continuous Happiness and Prosperity- A look at basic Human Aspirations, Right understanding, Relationship and Physical Facilities- the basic requirements for fulfillment of aspirations of every human being with their correct priority, Understanding Happiness and Prosperity correctly- A critical appraisal of the current scenario, Method to fulfill the above human aspirations: understanding and living in harmony at various levels.

### UNIT-2 **Understanding Harmony in the Human Being - Harmony in Myself**

Understanding human being as a co-existence of the sentient ‘I’ and the material ‘Body’, Understanding the needs of Self (‘I’) and ‘Body’ - Sukh and Suvidha, Understanding the Body as an instrument of ‘I’ (I being the doer, seer and enjoyer), Understanding the characteristics and activities of ‘I’ and harmony in ‘I’, Understanding the harmony of I with the Body: Sanyam and Swasthya; correct appraisal of Physical needs, meaning of Prosperity in detail, Programs to ensure Sanyam and Swasthya.

### UNIT-3 **Understanding Harmony in the Family and Society- Harmony in Human Human Relationship**

Understanding harmony in the Family- the basic unit of human interaction , Understanding values in human-human relationship; meaning of *Nyaya* and program for its fulfillment to ensure *Ubhay-tripti*; Trust (*Vishwas*) and Respect (*Samman*) as the foundational values of relationship, Understanding the meaning of *Vishwas*; Difference between intention and competence, Understanding the meaning of *Samman*, Difference between respect and differentiation; the other salient values in relationship, Understanding the harmony in the society (society being an extension of family): *Samadhan*, *Samridhi*, *Abhay*, *Sah-astitva* as comprehensive Human Goals, Visualizing a universal harmonious order in society- Undivided Society (*AkhandSamaj*), Universal Order (*Sarvabhaum Vyawastha* )- from family to world family!.

### UNIT-4 **Understanding Harmony in the Nature and Existence - Whole existence as Co-existence**

Understanding the harmony in the Nature, Interconnectedness and mutual fulfillment among the four orders of nature- recyclability and self-regulation in nature, Understanding Existence as Co-existence (*Sah-astitva*) of mutually interacting units in all-pervasive space, Holistic perception of harmony at all levels of existence.

### UNIT-5 **Implications of the above Holistic Understanding of Harmony on Professional Ethics**

Natural acceptance of human values, Definitiveness of Ethical Human Conduct,

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Basis for Humanistic Education, Humanistic Constitution and Humanistic Universal Order, Competence in Professional Ethics: a) Ability to utilize the professional competence for augmenting universal human order, b) Ability to identify the scope and characteristics of people-friendly and eco-friendly

production systems, technologies and management models, Case studies of typical holistic technologies, management models and production systems, Strategy for transition from the present state to Universal Human Order: a) At the level of individual: as socially and ecologically responsible engineers, technologists and managers, b) At the level of society: as mutually enriching institutions and organizations.

### **Text Books:**

1. R R Gaur, R Sangal, G P Bagaria, 2009, A Foundation Course in Human Values and Professional Ethics.

### **References:**

1. Ivan Illich, 1974, Energy & Equity, The Trinity Press, Worcester, and Harper Collins, USA
2. E.F. Schumacher, 1973, Small is Beautiful: a study of economics as if people mattered, Blond & Briggs, Britain.
3. Sussan George, 1976, How the Other Half Dies, Penguin Press. Reprinted 1986, 1991
4. Donella H. Meadows, Dennis L. Meadows, Jorgen Randers, William W. Behrens III, 1972, Limits to Growth – Club of Rome’s report, Universe Books.
5. A Nagraj, 1998, Jeevan Vidya Ek Parichay, Divya Path Sansthan, Amarkantak.
6. P L Dhar, RR Gaur, 1990, Science and Humanism, Commonwealth Publishers.
7. A N Tripathy, 2003, Human Values, New Age International Publishers.
8. SubhasPalekar, 2000, How to practice Natural Farming, Pracheen (Vaidik) KrishiTantraShodh, Amravati.
9. E G Seebauer & Robert L. Berry, 2000, Fundamentals of Ethics for Scientists & Engineers , Oxford University Press

## SUPPLY CHAIN ANALYTICS

Code: KMBA 304

Course Credit: 3

Contact Hours: 36 hours

### Course Objective:

- Understanding of global supply chain design and bullwhip effect
- Understanding of supply chain profitability and risk pooling
- Understanding of forecasting and effect of forecasting errors
- Understanding of supply chain coordination and supply contracts
- Understanding of supply chain relationship management.

### Unit 1: (8 hrs)

Linking supply chain strategy with corporate strategy, Global Supply Chain Design, Supply Chain Restructuring, Supply Chain Metrics. Bullwhip Effect: Demand-Supply mismatch, causes of bullwhip effect – order, synchronization, order batching, trade promotions and forward buying, and shortage gaming.

### Unit 2: (7 hrs)

Supply Chain Profitability: Factors affecting supply chain profit, Demand-supply, mismatch and role of inventory, Price discounts, News vendor model and optimal order quantity, Risk Pooling.

### Unit 3: (6 hrs)

Forecasting and effect of forecast errors, Collaborative forecasting, Postponement and, Quick response system, Vendor managed Inventory, Pricing and revenue management.

### Unit 4: (7 hrs)

Supply Chain Coordination: Concept of double marginalization, Supply Contracts – buy, back contract, revenue sharing contract, quantity flexibility contract.

### Unit 5: (8 hrs)

Supply Chain Relationship Management: Importance of relationship management in SC, Supplier relationship management, Purchasing portfolio models, Customer relationship management, Relationship management frameworks

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### Course Outcomes:

| Course Outcome   | Bloom's Taxonomy                   |
|--|------------------------------------|
| CO1. Understanding of global supply chain design and bullwhip effect | Remember(K1)<br>Understand (K2)    |
| CO2. Supply chain profitability and risk pooling                     | Understand (K2)<br>Analyze (K4)    |
| CO3. Forecasting and effect of forecasting errors                    | Understand (K2)                    |
| CO4. Supply chain coordination and supply contracts                  | Understand (K2)<br>Comprehend (K3) |
| CO5. Supply chain relationship management.                           | Understand (K2)<br>Comprehend (K3) |

### Suggested Readings:

1. Chopra, S., P. Meindl, D.V. Kalra, Supply Chain Management: Strategy, Planning, Operations, Pearson India, New Delhi.
2. Cachon, G.P., C. Terwiesch, Matching Supply with Demand: An Introduction to Operations Management, Tata McGraw Hill, New Delhi.

## MARKETING ANALYTICS

Code: KMBA 305

CREDIT: 3

Contact Hours: 36 hours

### COURSE OBJECTIVES

- To understand the basic concepts of Marketing Analytics
- To study various tools to have marketing insights in various marketing areas through empirical data
- To interpret the marketing data for effective marketing decision making
- To draw inferences from data in order to answer descriptive, predictive, and prescriptive questions relevant to marketing managers

#### **Unit -1: Introduction to marketing Analytics (4 hrs.)**

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

#### **Unit-2: Pricing Analytics (8 hrs.)**

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

#### **Unit-3: Sales Forecasting (8 hrs.)**

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

#### **Unit-4: Customer Analytics (8 hrs.)**

**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,

#### **Unit-5: Retailing & Advertising Analysis (8 hrs.)**

**Market Basket analysis:** Computing two way and three way lift, RFM Analysis, **Allocating Retail Space and Sales Resources:** Identifying the sales to marketing effort relationship & its modeling, optimizing sales effort

**Advertising Analysis:** Measuring the Effectiveness of Advertising, Pay per Click (PPC) Online Advertising

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### Course Outcome

After successful completion of this course students will be able to-

| Course Outcome   | Bloom's Taxonomy          |
|--|---------------------------|
| CO1. Students will develop the skill in marketing analytics  | Apply (K3), Create (K6)   |
| CO2. Students will be acquainted with better understanding of real life marketing data and its analysis    | Evaluate (K5)             |
| CO3. Students will develop analytical skill for effective market decision making in real life environment. | Analyze (K4), Create (K6) |

### Suggested Readings:

1. Marketing Analytics: Data-Driven Techniques with Microsoft Excel by Wayne L
2. Winston Wiley India Pvt. Ltd.
3. Marketing Analytics: Strategic Models and Metrics by Stephan Sorger, Create
4. Space Publishing
5. Marketing Engineering and Analytics by Gary Lilen, Arvind Rangaswamy, and Arnaud De Bruyn, Decision Pro, Inc.
6. Marketing Metrics by Dugar Anurag, SAGE Publishing India

# MBA (BUSINESS ANALYTICS) SECOND YEAR

## BUSINESS MODELING WITH SPREADSHEETS

Code: KMBA 351

Course Credit: 3

Contact Hours: 36 hours

### Course Objective:

- Understand fundamental of Visual Basic to be able to create front-end and back-end applications
- Develop skills in translating business decision problems into mathematical models and selecting appropriate mathematical techniques to solve the model.
- Learn to formulate, solve, and interpret practical decision-making and planning models using spreadsheets.
- Work through numerous examples of linear and integer programming, as well as Monte Carlo simulation, decision analysis, and queuing theory.
- Transform the student into an efficient and effective modeler for managing or consulting.

### Lab Exercise

| Practical No | Lab Module  | No of Labs work / class |
|--------------|---|-------------------------|
| 1            | Headers/Footers, Cell Comments, Worksheet Protection, Writing Macros, Drop-Down Lists, Form Controls,   | 2                       |
| 2            | Error Checking, and Conditional Formatting, VBA Programming in Excel for Decision Support Systems   | 2                       |
| 3            | Excel modeling tools, Waiting Lines and Queuing Theory,   | 1                       |
| 4            | Monte Carlo Simulation, Queuing Theory  | 1                       |
| 5            | Optimization with Excel Solver Problem formulation, use of solver, Sensitivity analysis   | 2                       |
| 6            | Applications include investment problem, inventory problem,   | 2                       |
| 7            | optimal product mix, workforce scheduling, assignment problem, transportation problem   | 3                       |
| 8            | Estimating a Demand Curve with an exercise  | 2                       |
| 9            | Pricing Products by Using Tie-Ins with an exercise  | 2                       |
| 10           | Pricing Products by Using Subjectively Determined Demand with an exercise   | 3                       |
| 11           | Weibull and Beta Distributions: Modeling Machine Life and Duration of a Project,  | 3                       |
| 12           | Using the Lognormal Random Variable to Model Stock Prices, The Economic Order Quantity Inventory Model, Inventory Modeling with Uncertain Demand. | 3                       |

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### Course Outcomes:

| Course Outcome  | Bloom's Taxonomy  |
|---|---|
| CO1: Ability to work on MS Excel and VBA.   | <ul style="list-style-type: none"><li>• Knowledge (K 2)</li><li>• Applying (K4)</li><li>• Remembering (K1)</li></ul>    |
| CO2: Able to apply Excel Modeling Tools in business scenario.   | <ul style="list-style-type: none"><li>• Knowledge (K 2)</li><li>• Applying (K 4)</li></ul>                              |
| CO3: Ability to understand and apply Solver, travelling salesman problem and optimization techniques in business problem. | <ul style="list-style-type: none"><li>• Applying (K 4)</li><li>• Analyzing (K 5)</li></ul>                              |
| CO4: Develop and understand estimating a Demand Curve   | <ul style="list-style-type: none"><li>• Comprehending (K 3)</li><li>• Knowledge (K2)</li><li>• Applying (K 4)</li></ul> |
| CO5: Apply and understand the inventory models.   | <ul style="list-style-type: none"><li>• Knowledge (K 2)</li><li>• Apply (K4)</li></ul>                                  |

### Text Books:

1. Microsoft Excel Data Analysis and Business Modeling, By Wayne Winston, Microsoft Press

### Reference Book:

1. Business Modeling with Spreadsheets, 3E, By Thin-Yin Leong, Michelle Cheong, McGraw Hill

### MACHINE LEARNING AND ARTIFICIAL INTELLIGENCE USING PYTHON

Code: KMBA 352

Course Credit: 3

Contact Hours: 36 hours

**Course objectives:** This course will enable students to

1. Make use of Data sets in implementing the machine learning algorithms
2. Implement the machine learning and artificial intelligence concepts and algorithms using python

**Lecture contents**

Basic Concepts and understanding the application & usage of Machine Learning.

Meaning and basics of AI and its practical scenario and its application in medical, manufacturing etc.

Introduction to Neural Network

**Lab Work:**

| S.N | Lab Module   | Lab work / Class |
|-----|--|------------------|
| 1   | Write a Python program to load the iris data from a given csv file into a data frame and print the shape of the data, type of the data and first 3 rows.   | 2                |
| 2   | Write a Python program using Scikit-learn to print the keys, number of rows-columns, feature names and the description of the Iris data  | 2                |
| 3   | Write a Python program to split the iris dataset into its attributes (X) and labels (y). The X variable contains the first four columns (i.e. attributes) and y contains the labels of the dataset   | 2                |
| 4   | Write a Python program to draw a scatterplot, then add a joint density estimate to describe individual distributions on the same plot between Sepal length and Sepal width.  | 2                |
| 5   | Write a Python program using Scikit-learn to split the iris dataset into 70% train data and 30% test data. Out of total 150 records, the training set will contain 120 records and the test set contains 30 of those records. Print both datasets. | 2                |
| 6   | Implement and demonstrate the any suitable algorithm for finding the most specific hypothesis based on a given set of training data samples. Read the training data from a <i>.CSV file</i> .  | 2                |
| 7   | For a given set of training data examples stored in a <i>.CSV file</i> , implement and demonstrate the Candidate-Elimination algorithm to output a description of the set of all hypotheses consistent with the training examples.                 | 2                |

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|           |  |          |
|-----------|--|----------|
| <b>8</b>  | Write a program to demonstrate the working of the decision tree using any suitable algorithm. Use an appropriate data set for building the decision tree and apply this knowledge to classify a new sample.                      | <b>2</b> |
| <b>9</b>  | Build an Artificial Neural Network by implementing the Backpropagation algorithm.  | <b>2</b> |
| <b>10</b> | Write a program to implement the naïve Bayesian classifier for a sample training data set stored as a .CSV file  | <b>2</b> |
| <b>11</b> | Write a program to construct a Bayesian network considering medical data. Use this model to demonstrate the diagnosis of heart patients using standard Heart Disease Data Set.   | <b>2</b> |
| <b>12</b> | Apply any suitable algorithm to cluster a set of data stored in a .CSV file. Use the same data set for clustering using k-Means algorithm. Compare the results of these two algorithms and comment on the quality of clustering. | <b>1</b> |
| <b>13</b> | Write a program to implement k-Nearest Neighbor algorithm to classify the iris data set.   | <b>1</b> |
| <b>14</b> | Implement the non-parametric Regression algorithm in order to fit data points. Select appropriate data set for your experiment and draw graphs.  | <b>1</b> |
| <b>15</b> | Write a Python program to get the accuracy of the Logistic Regression.   | <b>1</b> |

### Course Outcomes:

| Course Outcome  | Bloom's Taxonomy              |
|---|-------------------------------|
| CO1: Ability to use data sets in implementing the machine learning algorithms | Understand (K2)<br>Apply (K4) |
| CO2: Ability to build an Artificial Neural Network                            | Understand (K2)<br>Apply (K4) |
| CO3: Understand and ability to implement k-Nearest Neighbor algorithm         | Understand (K2)<br>Apply (K4) |
| CO4: Ability to implement the Regression algorithms                           | Understand (K2)<br>Apply (K4) |
| CO5: Ability to use Scikit-learn for machine learning                         | Apply (K4)                    |

**EMERGING TECHNOLOGIES IN GLOBAL BUSINESS  
ENVIRONMENT**

**Code: KMBA 401**

**Course Credits:3**

**Contact Hours :36 Hrs.**

**Course Objectives**

1. To give students an exposure to the VUCA environment of International Business
2. To provide in-depth understanding of digital transformation on business processes
3. To understand the impact of Industry 4.0 has on the context of International Business
4. To understand in detail, the shifts taking place in the Political, Economic, Social and Technological environments that are shaping business realities
5. To understand the changing role of International Organizations and changing dynamics in Geo Politics.

**Unit 1: Industry 4.0 and Digital Transformation (6 Hours)**

Meaning and Nature of Industry 4.0 and Latest Trends. Realignment in Political, Economic, Socio-Cultural, Technological Factors that are driving change in International Business Management, the changing nature of Globalization, The changing nature of regulatory environment, natural environment, new age ethics. Overview of Digital Transformation.

**Unit 2: Emerging Technologies as Drivers of Global Business (8 Hours)**

**Artificial Intelligence-** Machine Learning, Deep Learning Singularity – Time Lines and Implication. **Augmented Reality**, Virtual Reality and Mixed Reality and Applications. **Block chain** – Concepts and Industrial Applications, Challenges in adopting Block chain. **Additive Manufacturing:** Advantages and Disadvantages, new applications of additive manufacturing, impact of additive manufacturing on supply chain management, mass customization and the customer experience. Introduction of **Neuroscience in Business. Internet of Things (IoT).**

**Unit 3: New Age Economies (8 Hours)**

**Circular Economy-** Concept of Circular Economy, difference between Linear and Circular Economy, Role of Circular Economy in Sustainable Business and Innovation. **Behavioral Economics-** Core Concepts of Behavioral Economics, Nudging and Choice Architecture, Ethical Concerns of Behavioral Economics. **Economic Nationalism** -Nature of Economic Nationalism, Contemporary Cases in Economic Nationalism, Future of Economic Integration. **Sharing Economy** – New Business Models , Characteristics , Difference Between Platforms and Traditional Business Models, Different Types of Platforms , implications on future of work.

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### Unit 4: Changing Natures of Global Politics

(6 Hours)

**Identity Politics** – Issues & Challenges, The Rise of Authoritarianism and what that means for geo politics, Reviving Democratic Ideals, The Rise of China and its impact on global trade.

### Unit 5: Social, Cultural and Global Challenges

(8 Hours)

**Diversity of different generations** in the workplace, issue of inter-generational equity. **Migration** – Political, Economic and Human Rights Perspective, the Migrant Crisis in the EU. **Climate Change** – Political Dimensions of Climate Change, Plight and Issue of Climate Refugees, Sustainable Development Goals.

**Rising Inequality:** Historical Context of Inequality and Social Unrest, Global Inequality, Social and Economic Reforms. **Privacy in the Digital World** – Complexity of Privacy Issues, Basics of GDPR (General Data Protection Regulation), Importance of Personal Data, **Existential Threats** – Five Types of Risks associated with AI , Need for New Age Ethics .

### COURSE OUTCOMES

| Course Outcomes   | Learning Levels as per Bloom's Taxonomy for Evaluation and Assessment    |
|---|--|
| CO1: To get an overview of the changing context of International Business in the wake of Industry 4.0             | Analyzing (K4)<br>Applying(K3)<br>Understanding (K2)<br>Remembering (K1) |
| CO2: Conceptual understanding of the new technologies that are driving change in business operations and strategy | Analyzing (K4)<br>Applying(K3)<br>Understanding (K2)<br>Remembering (K1) |
| CO3: Understand shifts in economic thought and its impact on business decisions.                                  | Understanding (K2)<br>Remembering (K1)                                   |
| CO4: Understand changing geo politics and analyses its impact on international Business                           | Analyzing (K4)<br>Applying(K3)<br>Understanding (K2)<br>Remembering (K1) |
| CO5: Critically think about issues and challenges in the Global World and find sustainable solutions              | Applying(K3)<br>Understanding (K2)<br>Remembering (K1)                   |

### Suggested Readings

1. Kapoor, Mansi – Global Business Environment: Shifting Paradigms in the Fourth Industrial Revolution, SAGE Publishing India
2. Narendra Jadhav, New Age technology an Industrial Revolution 4.0(Konark Publisher)
3. Pranjal Sharma, India Automated (McMillan)

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4. Kapoor, M – Global Business Environment: Shifting Paradigms in the Fourth Industrial Revolution, SAGE India
5. Arun Sundararajan, The Sharing Economy: The End of Employment and the Rise of Crowd-Based Capitalism (MIT Press)
6. Mark Van Rijmenam, The Organisation of Tomorrow: How AI, blockchain and analytics turn your business into a data organisation (Routledge)
7. Nitin Seth, Winning in Digital Age (Penguin)
8. Hu, Ming, Sharing Economy (Springer)
9. Hill, International Business , Mc Graw-Hill
10. Cherunilam, F - International Trade and Export Management, Himalaya
11. Daniels - International Business (Pearson)

# MBA (BUSINESS ANALYTICS) SECOND YEAR

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## HR ANALYTICS

**Code: KMBA 402**

**Credits: 3**

**Contact Hours: 36**

### **COURSE OBJECTIVES:**

1. This course 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.
2. The student will use applicable benchmarks/metrics to conduct research and statistical analyses related to Human Resource Planning and Recruitment and Selection.
3. Employ appropriate software to record, maintain, retrieve and analyze Performance and training effectiveness.
4. Apply quantitative and qualitative analysis to understand and design compensation system.
5. Demonstrate how to connect HR results to business results.

### **UNIT 1**

**8 Hours**

**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.

### **UNIT 2**

**8 Hours**

**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.

### **UNIT 3**

**8 Hours**

**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.

### **UNIT 4**

**4 Hours**

**Monitoring impact of Interventions:** Tracking impact interventions, Evaluating stress levels and value-change. Formulating evidence based practices and responsible investment, Evaluation mediation process, moderation and interaction analysis.

### UNIT 5

8 Hours

**Applications of HR Metrics and Creating HR Dashboards:** HR Metrics, Types of HR Metrics, Staffing Metrics, Training and Development Metrics, Application-oriented Exercises : Dashboards: Few Key Excel Add-ins/Functions to Help Create Dashboards, Name Range, The Developer Tab, Form Controls, Important Excel Formulas Useful for Creating Dashboards, VLOOKUP, INDEX, SUMIF, AVERAGEIF and COUNTIF, Application of Excel Functions in Creating HR Dashboards, Storyboarding: Connecting the Dots and Integrating the Findings.

### Suggested Readings

1. Bhattacharya Kumar Dipak, HR Analytics Understanding Theories and Applications, SAGE Publishing
2. Banerjee Pratyush, Pandey Jatin and Gupta Manish (2019), Practical Applications of HR Analytics, SAGE Publishing
3. Sesil. J, Applying advanced analytics to HR management decisions: Methods for recruitment, managing performance and improving knowledge management. Prentice Hall.
4. Barnett K, Berk J, Human Capital Analytics. Word Association Publication. Fitz-Enz J,
5. The HR Analytics: Predicting the Economic Value of your Company's Human Capital Investments, AMACOM.

## SOCIAL MEDIA AND WEB ANALYTICS

**Code: KMBA403**

**Credits: 3**

**Teaching Hours: 36**

### **Objectives:**

- a. To provide basic understanding of the use and deployment of Digital marketing tools and web/social/mobile analytics platforms
- b. Gaining a grounded understanding of web analytics and business implication.
- c. To prepare the students with growth potentials for Web Analysts professionals

### **Unit 1 (6hrs)**

**Social Media & Analytics:** Introduction to Social Media, Social media landscape, Social Media Analytics & its need. SMA in Small and large organizations; Application of SMA in different social media platforms.

**Introduction to Web Analytics:** Definition, Process, Key terms: Site references, Keywords and Key phrases; building block terms: Visit characterization terms, Content characterization terms, Conversion metrics; Categories: Offsite web, on site web; Web analytics platform, Web analytics evolution, Need of web analytics, Advantages & Limitations.

### **Unit 2 (8hrs.)**

**Network fundamentals:** The social networks perspective - nodes, ties and influencers, Social network, web data and methods.

**Data Collection and Web Analytics Fundamentals:** Capturing Data: Web logs, web Beacons, java script tags, packet sniffing; Outcome data: E-commerce, Lead generation, Brand/ Advocacy and support; Competitive Data: Panel Based measurement, ISP based measurement, Search Engine Data; Organizational Structure.

Type and size of data, identifying unique page definition, cookies, Link Coding Issues.

### **Unit 3 (8hrs.)**

**Web Metrics & Analytics:** Common metrics: Hits, Page views, visits, unique page views, Bounce, Bounce rate & its improvement, Average time on site, Real time report, traffic source report, custom campaigns, content report, Google analytics; Key Performance Indicator: Need, characteristics, perspective and uses.

Graphs and Matrices- Basic measures for individuals and networks. Random graphs & network evolution, Social Context: Affiliation & Identity

**Web analytics tools:** A/B testing, online surveys, Web crawling and Indexing. Natural Language Processing Techniques for Micro-text Analysis

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### Unit 4 (5hrs.)

**Facebook Analytics:** Introduction, parameters, demographics. Analyzing page audience: Reach and engagement analysis. Post-Performance on FB; Social Campaigns: Goals and evaluating outcomes, Measuring and analyzing social campaigns, Social Network Analysis like Instagram, twitter, LinkedIn, YouTube etc. AdWords, Benchmarking, Categories of traffic: Organic traffic, Paid traffic;  
**Google Analytics:** Brief introduction and working, Google website optimizer, Implementation technology, Limitations, Performance concerns, Privacy issues.

### Unit 5 (9hrs.)

**Qualitative Analysis:** Heuristic evaluations: Conducting a heuristic evaluation, Benefits of heuristic evaluations; Site Visits: Conducting a site visit, Benefits of site visits; Surveys: Website surveys, Post-visit surveys, creating and running a survey, Benefits of surveys.

**Web analytics 2.0:** Web analytics 1.0 & its limitations, Introduction to WA 2.0, competitive intelligence analysis and data sources; website traffic analysis: traffic trends, site overlap and opportunities.

### COURSE OUTCOME

| Sl. No. | Course Outcome  | Learning Levels as per Bloom's Taxonomy for Evaluation and Assessment |
|---------|---|---|
| 1.      | CO1: Students will develop knowledge, understanding and skills in analysis of Social Media  | K1(Remember)<br>K2(Understand)  |
| 2.      | CO2: Acquainted with better understanding of implementation Web Analytics tool  | K1(Understand)<br>K3(Apply)<br>K4(Analyze)                            |
| 3.      | CO3:Develop analytical skills for effective decision alternatives in social media problems  | K4(Analyze)<br>K5(Evaluate)<br>K6(Create)                             |
| 4.      | CO4: Develop the knowledge, understanding and skills in Facebook and google analytics.  | K2(Understand)<br>K3(Apply)   |
| 5.      | CO5: Acquainted with better understanding of implementation of web analytics strategies and develop analytical skills for effective decision alternatives in social media operations. | K4(Analyze)<br>K5 (Evaluate)  |

### Suggested Readings

1. Rob Stokes, (2014), e marketing: The Essential Guide to Digital Marketing, Quirk Education.
2. Tuten & Bikramjit Rishi, Social Media Marketing, 3<sup>rd</sup> Ed. 2020, SAGE Publishing India
3. Dave Chaffey, Fiona Ellis-Chadwick, Richard Mayer, Kevin Johnston, (2012), Internet Marketing: Strategy, Implementation and Practice, Prentice Hall.
4. Liana Evans, Social Media Marketing: Strategies for Engaging in Facebook, Twitter & Other Social Media, Que Publishing.

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5. Vandana Ahuja, (Digital Marketing, 1st edition, Oxford University Press.
6. Avinash Kaushik, Web Analytics 2.0: The Art of Online Accountability and Science of Customer Centricity,
7. Clifton B., Advanced Web Metrics with Google Analytics, Wiley Publishing, Inc. 2nd ed.
8. Kaushik A., Web Analytics 2.0, The Art of Online Accountability and Science of Customer Centricity, Wiley Publishing, Inc. 1st ed.
9. Sterne J., Web Metrics: Proven methods for measuring web site success, John Wiley and Sons
10. Annmarie Hanlon, Digital Marketing, SAGE Publishing India

## HEALTHCARE ANALYTICS

**Code: KMBA404**

**Credits: 3**

**Teaching Hours: 36**

**Course Objectives:**

- To use data to make pertinent and accurate decisions in healthcare.
- Understanding of tools of analytics provides the capability to identify patterns in data and to implement the knowledge in developing strategies and improving performance.
- The objectives of this course are to enable students to develop an understanding of basic principles of data analysis and familiarize them with key tools and techniques that would enable them to take data driven decisions in healthcare.

**Unit I: Health Care Data (8 hrs.)**

Data as an asset for health care organization; Data, information, knowledge and wisdom hierarchy; Types and sources of healthcare data; Data governance, methods for effective use of data analytics; Ethics, data ownership and privacy.

**Unit II: Working with Data (8 hrs.)**

Common data analytics terms, Steps of data analytics; Enterprise data architecture in health care organizations; Common data types; Selection, aggregation, querying and transformation of data; Descriptive and visual analytics; Common patterns or distributions in data.

**Unit III: Healthcare analytics tools (8 hrs.)**

Predictive analytics tools, classification, regression; Introduction to text mining, contextual analysis, social media analytics; Text mining, social media analytics; Basics of image Analysis; analysis of multimedia Data

**Unit IV: Decision analysis (8 hrs.)**

Decision tree, select prescriptive analytics applications in health care operations management, Scheduling, resource allocation, project management, waiting line management etc.

**Unit V: Innovations in Health Care (8 hrs.)**

Advances in medical technology – sensors, digital medical treatment and diagnostic devices, Advances in healthcare informatics related areas like mobile health and cloud-based technologies, Newer service delivery models – remote monitoring and telehealth

**Suggested Readings:**

1. Anderson, D., Sweeney, D., Williams, T., Martin, R.K.. An introduction to management science: quantitative approaches to decision making. Cengage Learning, India.
2. Davenport, T. H., Harris, J. G., & Morison, R. Analytics at work: Smarter decisions, better results. Harvard Business Press.
3. Madsen, L. B. Data-driven healthcare: how analytics and BI are transforming the industry. Wiley India Private Limited.

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4. Meier, Kenneth J., Jeffrey L. Brudney, and John Bohte. Applied Statistics for Public and Nonprofit Administration, 9th Edition, Cengage.
5. McLaughlin, Daniel B. and Hays Julie M. Healthcare Operations Management. Health Administration Press.
6. McNeill, D., & Davenport, T. H. Analytics in Healthcare and the Life Sciences: Strategies, Implementation Methods, and Best Practices. Pearson Education.
7. Reddy, C. K., & Aggarwal, C. C. (Editors.). Healthcare data analytics (Vol. 36). CRC Press.
8. Strome, T. L., & Liefer, A. Healthcare analytics for quality and performance improvement. Hoboken, NJ, USA: Wiley.
9. Veney, James E., John F. Kros, and David A. Rosenthal. Statistics for Health Care Professionals: Working with Excel, Jossey-bass.

### Course Outcomes:

| Course Outcome   | Bloom's Taxonomy                |
|--|---------------------------------|
| CO1. Identify sources of data, suggest methods for collecting, sharing and analyzing data  | Comprehend (K3)                 |
| CO2. Understanding the issues involved in data quality and their management  | Understand (K2)                 |
| CO3. Discuss the difference between descriptive, predictive and prescriptive analytics.  | Understand (K2)                 |
| CO4. Able to use basic data presentation and visualization tools and manipulate simple datasets  | Analyze (K4)                    |
| CO5. Able to identify decision problems willing for analytics-based solutions. Understand how data analytics can provide potential solutions to improve quality and lower cost | Analyze (K4)<br>Understand (K2) |

# MBA (BUSINESS ANALYTICS) SECOND YEAR

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## BUSINESS APPLICATIONS OF BLOCK CHAIN TECHNOLOGIES

Code: KMBA 405

Credits: 3

Contact Hours: 36

Course Objectives:

- Understanding Blockchain and its significance
- Understanding Cryptography and Blockchain networks
- Understanding Business Challenges
- Understanding domain specific Blockchain business cases
- Understanding Crypto Economy and Decentralized Internet

### Unit 1: Introduction (8 hrs.)

What is Blockchain, Game Theory and Cryptography, Blockchain vs Traditional architecture, Database Vs. Ledger, State Transitions and State Machines, The Consensus Algorithms, Software.

### Unit 2: Benefits and Trust Layer (8 hrs.)

A new Trust Layer, Decentralization of Trust, A spectrum of Trust Services, The Blockchain Landscape, Benefits and Indirect benefits, Trusted Blockchain enabling services, Identify ownership and representation, Decentralized data security, Blockchain as Cloud.

### Unit 3: Blockchain Framework (8 hrs.)

Blockchain with a Framework approach, Technical Challenges, Business Challenges, Legal Barriers, Behavioral/ Educational Challenges.

Public, Private, and Consortium Blockchain networks, Blockchain pitfalls, Distinctions and Considerations of Resource and Control. Comparative Study and Use case: Ethereum

### Unit 4: Blockchain Business Case (8 hrs.)

Blockchain domain specific Business Case – Supply chain, Financial markets, Healthcare & Transportation, BFSI, Insurance, Digital Marketing.

### Unit 5: Blockchain Architecture (6 hrs.)

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.

### Course Outcomes:

| Course Outcome   | Bloom's Taxonomy              |
|--|-------------------------------|
| CO1: Understanding Blockchain and its significance           | Understand (K2)               |
| CO2: Understanding Cryptography and Blockchain networks      | Understand (K2)               |
| CO3: Business Challenges in Blockchain                       | Understand (K2)               |
| CO4: Understanding domain specific Blockchain business cases | Understand (K2)<br>Apply (K4) |
| CO5: Understanding Crypto Economy and Decentralized Internet | Apply (K4)                    |

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### **Text Book:**

- Blockchain: The blockchain for beginners guide to blockchain technology and leveraging blockchain programming”, by Josh Thompsons

### **Reference Book:**

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
4. “The Business Blockchain: Promise, Practice, and Application of the Next Internet Technology”, by William Mougayar

## DATABASE MANAGEMENT SYSTEMS

**Code: KMBA406**

**Course Credits: 3**

**Contact Hours: 36**

**Course Objective:** The course has been designed to introduce the students with the applications of systems designed to manage the data resources of organizations.

### **Unit-I (8hrs.)**

**Introduction:** Overview, database system Vs file system, Database system concept and architecture, data model schema and instances, data independence and database language and interfaces, data definitions language, DML, Overall Database Structure. **Data modeling using the Entity Relationship Model:** ER model concepts, notation for ER diagram, mapping constraints,

### **Unit-II (7hrs.)**

**Relational data Model and Language:** keys, Concepts of Super Key, candidate key, primary key, Relational data model concepts, integrity constraints, entity integrity, referential integrity, Keys constraints, Domain constraints, relational algebra, relational calculus, and tuple and domain calculus.

### **Unit-III (10hrs.)**

**Introduction on SQL:** Characteristics of SQL, advantage of SQL. SQL data type and literals. Types of SQL commands. SQL operators and their procedure. Tables, views and indexes. Queries and sub queries. Aggregate functions. Insert, update and delete operations, Joins, Unions, Intersection, Minus, Cursors, Triggers, and Procedures in SQL/PL SQL

**Data Base Design & Normalization:** Functional dependencies, normal forms, first, second, third normal forms.

### **Unit-IV (7hrs.)**

**Transaction Processing Concept:** Transaction system, Testing of serializability, serializability of schedules, conflict & view serializable schedule, recoverability, backup ,Recovery from transaction failures, log based recovery, checkpoints, deadlock handling.

**Concurrency control,** Locking Techniques for concurrency control, Time stamping protocols for concurrency control, validation based protocol, multiple granularity, Multi version schemes,

### **Unit-V (6hrs.)**

**Recent Trends in Database Management Systems:** Centralized and Client-Server Architectures, Distributed Databases, Object-Oriented Database, Spatial & Temporal Databases, Decision Support Systems, Data Analysis, Data Mining & Warehousing, Data Visualization, Mobile Databases, OODB & XML Databases, Multimedia & Web Databases, Spatial and Geographical Databases, Web and Mobile Databases, Active Databases

## MBA (BUSINESS ANALYTICS) SECOND YEAR

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### Suggested Readings:

1. Navathe E - Fundamentals of Database Systems (Pearson Education,)
2. Majumdar and Bhattacharya - Database Management System (Tata McGraw Hill)
3. Chakrabarti- Advance Database Management System (Wiley Dreamtech)
4. Beynon -Davies P- Database Systems (Palgrave)
5. Karthikeyan-Understanding Database Management System (Acme Learning)
6. Hoffer - Modern Database Management (Pearson Education)

### Course Outcome & Bloom's Taxonomy

|   |   |
|---|---|
| CO1: Knowledge about the DBMS Technology            | K1 (Remember)<br>K2(Understand)               |
| CO2: Understanding the business application of DBMS | K1 (Remember)<br>K2(Understand)<br>K3 (Apply) |
| CO3: Application of DBMS for business process       | K2(Understand)<br>K3(Apply)<br>K4 (Analyze)   |
| CO4: Knowledge and uses of Data mining techniques   | K1 (Remember)<br>K2(Understand)<br>K3(Apply)  |
| CO5: Working knowledge of DBMS Software ORACLE      | K1 (Remember)<br>K2(Understand)<br>K3(Apply)  |

## FINANCIAL CREDIT RISK ANALYTICS

Code: KMBA 407

Course Credit: 3

Teaching Hours: 40 Hrs

### Course Objectives:

1. Understand about various types of financial credit.
2. Understand the credit risk and its rating
3. Understanding of credit commitments and its application
4. Understanding of risk management and corporate governance.
5. Measure riskiness of a stock or a portfolio position.

### UNIT I : Introduction (6 hours)

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.

### UNIT II : Trade Credit Risk (8 hours)

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.

### UNIT III: Letter of Credit and Loan Commitments (8 hours)

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.

### UNIT IV: Operational Risk: Overview (6 hours)

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.

## MBA (BUSINESS ANALYTICS) SECOND YEAR

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### UNIT V: Credit Analysis & Rating (8 hours)

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.

#### Course Outcome:

|   |  |
|---|--|
| CO1: Understand about various types of financial credit.        | K1 (Remember)<br>K2(Understand)              |
| CO2: Understand the credit risk and its rating.                 | K1(Remember)<br>K2(Understand)               |
| CO3 : Understanding of credit commitments and its application   | K2(Understand)<br>K3(Apply)                  |
| CO4: Understanding of risk management and corporate governance. | K1 (Remember)<br>K2(Understand)<br>K3(Apply) |
| CO5: Measure riskiness of a stock or a portfolio position.      | K2(Understand)<br>K5 (Evaluation)            |

#### SUGGESTED READINGS:

##### Reference Books

1. Fundamentals of Credit and Credit Analysis: Corporate Credit Analysis Kindle Edition by Arnold Ziegel (Author), Ronna Ziegel (Editor)
2. Credit Appraisal Risk Analysis & Decision Making Paperback ,1 January by V.Rajaraman (Author)
3. Financial Engineering, Risk Management & Financial Institutions (English, Paperback, Rao S.S. Prasada)
4. The Bank Credit Analysis Handbook: A Guide for Analysts, (Wiley Finance) by Jonathan Golin (Author), Philippe Delhaise (Author)
5. 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)
6. 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)
7. Credit Risk Modeling Theory And Applications by David Lando, New Age International (P) Ltd., Publishers