ANNA UNIVERSITY, CHENNAI

NON-AUTONOMOUS COLLEGES AFFILIATED TO ANNA UNIVERSITY

MBA (ARTIFICIAL INTELLIGENCE AND DATA SCIENCE)

REGULATIONS – 2021

CHOICE BASED CREDIT SYSTEM

PROGRAMME EDUCATIONAL OBJECTIVES (PEOs) :

MBA programme curriculum is designed to prepare the post graduate students

I. To have a thorough understanding of the core aspects of the business.
II. To provide the learners with the management tools to identify, analyze and create business opportunities as well as solve business problems.
III. To prepare them to have a holistic approach towards management functions.
IV. To inspire and make them practice ethical standards in business.

PROGRAMME OUTCOMES (POs):

On successful completion of the programme,

1. Ability to apply the business acumen gained in practice.
2. Ability to understand and solve managerial issues.
3. Ability to communicate and negotiate effectively, to achieve organizational and individual goals.
4. Ability to understand one's own ability to set achievable targets and complete them.
5. Ability to fulfill social outreach
6. Ability to take up challenging assignments

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MBA (ARTIFICIAL INTELLIGENCE AND DATA SCIENCE)
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CURRICULA AND SYLLABI FOR I TO IV SEMESTER

SEMESTER - I

SL. NO.	COURSE CODE	COURSE TITLE	CATEGORY	PERIODS PER WEEK			TOTAL CONTACT PERIODS	CREDITS
				L	T	P		
THEORY								
1.	BA4101	Statistics for Management	PCC	3	0	0	3	3
2.	BA4102	Management Concepts and Organizational Behavior	PCC	3	0	0	3	3
3.	BA4103	Managerial Economics	PCC	3	0	0	3	3
4.	BA4104	Accounting for Decision Making	PCC	3	0	0	3	3
5.	BA4105	Legal Aspects of Business	PCC	3	0	0	3	3
6.	BA4106	Information Management	PCC	3	0	0	3	3
7.		Non-Functional Elective	NEC	3	0	0	3	3
PRACTICAL								
8.	BA4111	Indian ethos (Seminar)	EEC	0	0	4	4	2
9.	BA4112	Business Communication (Laboratory)	EEC	0	0	4	4	2
			TOTAL	**21**	**0**	**8**	**29**	**25**

SEMESTER – II

S. NO.	COURSE CODE	COURSE TITLE	CATEGORY	PERIODS PER WEEK			TOTAL CONTACT PERIODS	CREDITS
				L	T	P		
THEORY								
1.	BA4201	Quantitative Techniques for Decision Making	PCC	3	0	0	3	3
2.	BA4202	Financial Management	PCC	3	0	0	3	3
3.	BA4203	Human Resource Management	PCC	3	0	0	3	3
4.	BA4204	Operations Management	PCC	3	0	0	3	3
5.	BA4205	Business Research	PCC	3	0	0	3	3

		Methods						
6.	BA4206	Business Analytics	PCC	3	0	0	3	3
7.	BA4207	Marketing Management	PCC	3	0	0	3	3
PRACTICAL								
8.	BA4211	Business Ethics (Seminar)	EEC	0	0	4	4	2
9.	BA4212	Data analysis and Business Modelling (Laboratory)	PCC	0	0	4	4	2
			TOTAL	**21**	**0**	**8**	**29**	**25**

Summer internship – minimum of 4 weeks of internship

The report along with the company certificate should be submitted within the two weeks of the reopening date of 3rd semester. The report should be around 40 pages. The report should be sent to the Controller of Examinations by the HOD through the Principal, before the last working day of the 3rd Semester.

SEMESTER - III

SL. NO.	COURSE CODE	COURSE TITLE	CATEGORY	PERIODS PER WEEK			TOTAL CONTACT PERIODS	CREDITS
				L	T	P		
THEORY								
1.	BS4301	Introduction to Artificial Intelligence	PCC	3	0	0	3	3
2.	BS4302	Fundamentals of Data Science	PCC	3	0	0	3	3
3.	BS4303	Artificial Neural Networks	PEC	3	0	0	3	3
4.	BS4304	Machine Learning Methodologies	PEC	3	0	0	3	3
5.		Professional Elective I	PEC	3	0	0	3	3
6.		Professional Elective II	PEC	3	0	0	3	3
7.		Professional Elective III	PEC	3	0	0	3	3
8.		Professional Elective IV	PEC	3	0	0	3	3
PRACTICAL								
9.	BS4311	Deep Learning (Practical)	EEC	0	0	4	4	2
10.	BS4312	Summer Internship	EEC	0	0	4	4	2
			TOTAL	**24**	**0**	**8**	**32**	**28**

SEMESTER – IV

SI. NO	COURSE CODE	COURSE TITLE	CATEGORY	PERIODS PER WEEK			TOTAL CONTACT PERIODS	CREDITS
				L	T	P		
PRACTICAL								
1.	BS4411	Project Work	EEC	0	0	24	24	12
			TOTAL	**0**	**0**	**24**	**24**	**12**

TOTAL :90 CREDITS

PROFESSIONAL ELECTIVES (PEC)

FUNCTIONAL SPECIALISATIONS

1. Students can take three elective subjects from **two functional** specializations

Or

2. Students can take six elective subjects from any **one sectoral** specialization

SL. NO	COURSE CODE	COURSE TITLE	CATEGORY	PERIODS PER WEEK			TOTAL CONTACT PERIODS	CREDITS
				L	T	P		
1.	BA4032	Entrepreneurship Development	NEC	3	0	0	3	3
2.	BA4033	Event Management	NEC	3	0	0	3	3
3.	BS4001	Advanced Machine Learning	PEC	3	0	0	3	3
4.	BS4002	Deep Learning - I	PEC	3	0	0	3	3
5.	BS4003	Natural Language Processing	PEC	3	0	0	3	3
6.	BS4004	Deep Learning -II	PEC	3	0	0	3	3
7.	BS4005	Business Intelligence	PEC	3	0	0	3	3
8.	BS4006	Research Methods in Business	PEC	3	0	0	3	3
9.	BS4007	Financial Reporting statement and Analysis	PEC	3	0	0	3	3
10.	BS4008	Big Data Management and Security	PEC	3	0	0	3	3
11.	BS4009	Analytics toolkit for Decision Sciences	PEC	3	0	0	3	3

12.	BS4010	Digital Marketing	PEC	3	0	0	3	3
13.	BS4011	Artificial Intelligence & its applications	PEC	3	0	0	3	3
14.	BS4012	Natural Language Processing with LLM	PEC	3	0	0	3	3
15.	BS4013	Data Visualization	PEC	3	0	0	3	3
16.	BS4014	Data Base Management System	PEC	3	0	0	3	3

BA4101 STATISTICS FOR MANAGEMENT L T P C
3 0 0 3

COURSE OBJECTIVE:

- To learn the applications of statistics in business decision making.

UNIT I INTRODUCTION 9

Basic definitions and rules for probability, conditional probability independence of events, Baye's theorem, and random variables, Probability distributions: Binomial, Poisson, Uniform and Normal distributions.

UNIT II SAMPLING DISTRIBUTION AND ESTIMATION 9

Introduction to sampling distributions, sampling distribution of mean and proportion, application of central limit theorem, sampling techniques. Estimation: Point and Interval estimates for population parameters of large sample and small samples, determining the sample size.

UNIT III TESTING OF HYPOTHESIS - PARAMETIRC TESTS 9

Hypothesis testing: one sample and two sample tests for means and proportions of large samples (z-test), one sample and two sample tests for means of small samples (t-test), F-test for two sample standard deviations. ANOVA one and two way

UNIT IV NON-PARAMETRIC TESTS 9

Chi-square test for single sample standard deviation. Chi-square tests for independence of attributes and goodness of fit. Sign test for paired data. Rank sum test. Kolmogorov-Smirnov – test for goodness of fit, comparing two populations. Mann – Whitney U test and Kruskal Wallis test. One sample run test.

UNIT V CORRELATION AND REGRESSION 9

Correlation – Coefficient of Determination – Rank Correlation – Regression – Estimation of Regression line – Method of Least Squares – Standard Error of estimate.

TOTAL:45 PERIODS

COURSE OUTCOMES:

- To facilitate objective solutions in business decision making.
- To understand and solve business problems.
- To apply statistical techniques to data sets, and correctly interpret the results.
- To develop skill-set that is in demand in both the research and business environments.
- To enable the students to apply the statistical techniques in a work setting.

REFERENCES:

1. Richard I. Levin, David S. Rubin, Masood H.Siddiqui, Sanjay Rastogi, Statistics for Management, Pearson Education, 8th Edition, 2017.
2. Prem. S. Mann, Introductory Statistics, Wiley Publications, 9th Edition, 2015.
3. T N Srivastava and Shailaja Rego, Statistics for Management, Tata McGraw Hill, 3rd Edition 2017.
4. Ken Black, Applied Business Statistics, 7th Edition, Wiley India Edition, 2012.
5. David R. Anderson, Dennis J. Sweeney, Thomas A.Williams, Jeffrey D.Camm, James J.Cochran, Statistics for business and economics, 13th edition, Thomson (South – Western) Asia, Singapore, 2016.
6. N. D. Vohra, Business Statistics, Tata McGraw Hill, 2017.

BA4102 MANAGEMENT CONCEPTS AND ORGANIZATIONAL BEHAVIOR L T P C
3 0 0 3

COURSE OBJECTIVES:

- To familiarize the students to the basic concepts of management in order to aid in understanding how an organization functions, and in understanding the complexity and wide variety of issues managers face in today's business firms.
- To acquaint the students with the fundamentals of managing business and to understand individual and group behaviour at work place so as to improve the effectiveness of an organization. The course will use and focus on Indian experiences, approaches and cases.

UNIT I NATURE AND THEORIES OF MANAGEMENT 9

Evolution of management Thought-Classical, Behavioral and Management Science Approaches Management- meaning, levels, management as an art or science, Managerial functions and Roles, Evolution of Management Theory- Classical era- Contribution of F.W.Taylor, Henri Fayol, Neo-Classical-Mayo & Hawthorne Experiments. • Modern era – system & contingency approach Managerial Skills.

UNIT II PLANNING AND ORGANISING 9

Planning - Steps in Planning Process - Scope and Limitations - Forecasting and types of Planning - Characteristics of a sound Plan - Management by Objectives (MBO) - Policies and Strategies - Scope and Formulation - Decision Making - Types, Techniques and Processes.

Organisation Structure and Design - Authority and Responsibility Relationships - Delegation of Authority and Decentralisation - Interdepartmental Coordination - - Impact of Technology on Organisational design - Mechanistic vs Adoptive Structures - Formal and Informal Organisation. Control : meaning, function, Process and types of Control.

UNIT III INDIVIDUAL BEHAVIOUR 9

Meaning of Organizational behavior, contributing disciplines, importance of organizational behavior, Perception and Learning - Personality and Individual Differences - Motivation theories and Job Performance - Values, Attitudes and Beliefs - Communication Types-Process - Barriers - Making Communication Effective.

UNIT IV GROUP BEHAVIOUR 9

Groups and Teams: Definition, Difference between groups and teams, Stages of Group Development, Group Cohesiveness, Types of teams, Group Dynamics - Leadership - Styles - Approaches - Power and Politics - Organisational Structure - Organisational Climate and Culture, Conflict: concept, sources, Types, Stages of conflict, Management of conflict Organisational Change and Development.

UNIT V EMERGING ASPECTS OF ORGANIZATIONAL BEHAVIOUR 9

Comparative Management Styles and approaches - Japanese Management Practices Organizational Creativity and Innovation - Organizational behavior across cultures - Conditions affecting cross cultural organizational operations, Managing International Workforce, Productivity and cultural contingencies, Cross cultural communication, Management of Diversity.

TOTAL: 45 PERIODS

COURSE OUTCOMES:

On completion of course, Students will develop

CO1 Understanding of various management concepts and skills required in the business world

CO2 In-depth knowledge of various functions of management in a real time management context
CO3 Understanding of the complexities associated with management of individual behavior in the organizations
CO4 Develop the skillset to have manage group behaviour in Organizations
CO5 Insights about the current trends in managing organizational behaviour

REFERENCES:

1. Andrew J. Dubrin, Essentials of Management, Thomson Southwestern, 10th edition, 2016.
2. Samuel C. Certo and S.Trevis Certo, Modern Management: Concepts and Skills, Pearson education, 15th edition, 2018.
3. Harold Koontz and Heinz Weihrich, Essentials of Management: An International, Innovation, And Leadership Perspective, 10th edition, Tata McGraw-Hill Education, 2015.
4. Charles W.L Hill and Steven L McShane, „Principles of Management, McGraw Hill Education, Special Indian Edition, 2017.
5. Stephen P. Robbins, Timothy A.Judge, Organisational Behavior, PHI Learning / Pearson Education, 16th edition, 2014.
6. Fred Luthans, Organisational Behavior, McGraw Hill, 12th Edition, 2013.
7. Don Hellriegel, Susan E. Jackson and John W,Jr Slocum, Management: A competency-Based Approach, Thompson South Western,11th edition, 2008.
8. Heinz Weihrich, Mark V Cannice and Harold Koontz, Management- A global entrepreneurial perspective, Tata McGraw Hill, 12th edition, 2008.
9. Stephen P. Robbins, David De Cenzo and Mary Coulter, Fundamentals Of Management, Prentice Hall of India,9 th edition 2016.
10. McShane, Mary V. Glinow, Organizational Behavior, 8th Edition, Tata Mc Graw Hill, 2017.
11. Nelson, Quick, Khandelwal. ORGB – An innovative approach to learning and teaching. Cengage learning. 2nd edition. 2012
12. Robert Konopaske, John M Ivancevich, Michael T Matteson, Oranizational Behavior and Management, 11th edition, Tata McGraw Hill, 2017.
13. Udai Pareek, Understanding Organisational Behavior, 3rd Edition, Oxford Higher Education, 2011.
14. Jerald Greenberg, Behavior in Organizations, PHI Learning. 10th edition. 2011

BA4103 MANAGERIAL ECONOMICS L T P C
3 0 0 3

COURSE OBJECTIVE:

- To introduce the concepts of scarcity and efficiency; to explain principles of micro economics relevant to managing an organization; to describe principles of macroeconomics to have the understanding of economic environment of business.

UNIT I INTRODUCTION 9

The themes of economics – scarcity and efficiency – three fundamental economic problems – society's capability – Production possibility frontiers (PPF) – Productive efficiency Vs economic efficiency – economic growth & stability – Micro economies and Macro economies – the role of markets and government – Positive Vs negative externalities.

UNIT II CONSUMER AND PRODUCER BEHAVIOUR 9

Market – Demand and Supply – Determinants – Market equilibrium – elasticity of demand and supply – consumer behaviour – consumer equilibrium – Approaches to consumer behaviour – Production – Short-run and long-run Production Function – Returns to scale – economies Vs diseconomies of scale – Analysis of cost – Short-run and long-run cost function – Relation between Production and cost function.

UNIT III PRODUCT AND FACTOR MARKET 9

Product market – perfect and imperfect market – different market structures – Firm's equilibrium and supply – Market efficiency – Economic costs of imperfect competition – factor market – Land, Labour and capital – Demand and supply – determination of factor price – Interaction of product and factor market – General equilibrium and efficiency of competitive markets.

UNIT IV PERFORMANCE OF AN ECONOMY – MACRO ECONOMICS 9

Macro-economic aggregates – circular flow of macroeconomic activity – National income determination – Aggregate demand and supply – Macroeconomic equilibrium – Components of aggregate demand and national income – multiplier effect – Demand side management – Fiscal policy in theory.

UNIT V AGGREGATE SUPPLY AND THE ROLE OF MONEY 9

Short-run and Long-run supply curve – Unemployment and its impact – Okun's law – Inflation and the impact – reasons for inflation – Demand Vs Supply factors –Inflation Vs Unemployement tradeoff – Phillips curve –short- run and long-run –Supply side Policy and management- Money market- Demand and supply of money – money-market equilibrium and national income – the role of monetary policy.

TOTAL: 45PERIODS

COURSE OUTCOMES:

- To introduce the concepts of scarcity and efficiency;
- To explain principles of microeconomics relevant to managing an organization
- To describe principles of macroeconomics
- To have the understanding of economic environment of business.
- To study about the policies that regulate economic variables

REFERENCES:

1. Paul A. Samuelson, William D. Nordhaus, Sudip Chaudhuri and Anindya Sen, Economics, 19th edition, Tata McGraw Hill, New Delhi, 2011
2. William Boyes and Michael Melvin, Textbook of economics, Biztantra, 7 th edition 2008.
3. N. Gregory Mankiw, Principles of Economics, 8 th edition, Thomson learning, New Delhi,2017.
4. Richard Lipsey and Alec Chrystal, Economics, 13th edition, Oxford, University Press, New Delhi, 2015.
5. Karl E. Case and Ray C. Fair, Principles of Economics, 12th edition, Pearson, Education Asia, New Delhi, 2017.
6. Panneerselvam. R, Engineering Economics, 2 nd Edition, PHI Learning, 2014.

BA4104 ACCOUNTING FOR DECISION MAKING L T P C
3 0 0 3

COURSE OBJECTIVE:

- Acquire a reasonable knowledge in accounts analysis and evaluate financial statements

UNIT I FINANCIAL ACCOUNTING 9

Introduction to Financial, Cost and Management Accounting – Generally accepted accounting principles– Double Entry System – Preparation of Journal, Ledger and Trial Balance Preparation of Final Accounts: Trading, Profit and Loss Account and Balance Sheet - Reading the financial statements

UNIT II ANALYSIS OF FINANCIAL STATEMENTS 9

Financial ratio analysis, Interpretation of ratio for financial decisions- Dupont Ratios – Comparative statements - common size statements. Cash flow (as per Accounting Standard 3) and Funds flow statement analysis – Trend Analysis.

UNIT III COST ACCOUNTING 9

Cost Accounts – Classification of costs – Job cost sheet – Job order costing – Process costing – (excluding Interdepartmental Transfers and equivalent production) – Joint and By Product Costing – Activity Based Costing, Target Costing.

UNIT IV MARGINAL COSTING 9

Marginal Costing and profit planning – Cost, Volume, Profit Analysis – Break Even Analysis – Decision making problems -Make or Buy decisions -Determination of sales mix - Exploring new markets - Add or drop products -Expand or contract.

UNIT V BUDGETING AND VARIANCE ANALYSIS 9

Budgetary Control – Sales, Production, Cash flow, fixed and flexible budget – Standard costing and Variance Analysis – (excluding overhead costing) -Accounting standards and accounting disclosure practices in India.

TOTAL : 45 PERIODS

COURSE OUTCOMES:

1. A thorough grounding of financial accounting concepts
2. Preparation of financial statement analysis
3. Understand the management and cost accounting techniques
4. Apply the management and cost accounting techniques for decision making
5. Assess the accountancy standards of practices in India

REFERENCES:

1. R. Narayanaswamy, Financial Accounting, PHI, sixth edition, 2017.
2. M.Y. Khan & P.K. Jain, Management Accounting, Tata McGraw Hill, 8 th edtion, 2018.
3. T.S. Reddy & A. Murthy, Financial Accounting, Margham Publications, 2014
4. Jan Williams, Susan Haka, Mark S bettner, Joseph V Carcello, Financial and Managerial Accounting - The basis for business Decisions, 18th edition, Tata McGraw Hill Publishers, 2017
5. Charles T. Horngren, Gary L.Sundem, David Burgstahler, Jeff Schatzberg, Introduction to Management Accounting, PHI Learning, 2014 , 16th edition.
6. Earl K. Stice& James D.Stice, Financial Accounting, Reporting and Analysis, 8th edition, Cengage Learining, 2015.
7. N.M. Singhvi, Ruzbeh J.Bodhanwala, Management Accounting – Text and cases,3 rd edition PHI Learning, 2018
8. Ashish K. Battacharya, Introduction to Financial Statement Analysis, Elsiever, 2012.

BA4105 LEGAL ASPECTS OF BUSINESS L T P C
3 0 0 3

COURSE OBJECTIVE:

- The objective of this course is to familiarize the students with various laws that will help them to refine their understanding of how law affects the different aspects of business.

UNIT I COMMERCIAL LAW 9

THE INDIAN CONTRACT ACT 1872
Definition of contract, essentials elements and types of a contract, Formation of a contract, performance of contracts, breach of contract and its remedies, Quasi contracts - Contract Of Agency: Nature of agency, Creation and types of agents, Authority and liability of Agent and principal: Rights and duties of principal and agents, termination of agency.

THE SALE OF GOODS ACT 1930 Nature of Sales contract, Documents of title, risk of loss, Guarantees and Warranties, performance of sales contracts, conditional sales and rights of an unpaid seller -

NEGOTIABLE INSTRUMENTS ACT 1881: Nature and requisites of negotiable instruments. Types of negotiable instruments, liability of parties, holder in due course, special rules for Cheque and drafts, discharge of negotiable instruments.

UNIT II COMPANY LAW AND COMPETITION ACT 9
COMPANY ACT 1956&2013 Major principles – Nature and types of companies, Formation, Memorandum and Articles of Association, Prospectus, Power, duties and liabilities of Directors, winding up of companies, Corporate Governance.
Competition Act 2002 - Introduction, Definitions, Enquiry into Certain Agreements and Dominant Position of Enterprise and Combinations.

UNIT III INDUSTRIAL LAW 9
An Overview of Factories Act - Payment of Wages Act - Payment of Bonus Act - Industrial Disputes Act.

UNIT IV CORPORATE TAX & GST 9
Corporate Tax Planning, Corporate Taxes and Overview of Latest Developments in Indirect tax Laws relating to GST: An introduction including constitutional aspects, Levy and collection of CGST & IGST, Basic concept of time and value of supply, Input tax credit, Computation of GST Liability, Registration, Tax Invoice, Credit & Debit Notes, Electronic Way bill, Returns, Payment of taxes including Reverse Charge

UNIT V CONSUMER PROTECTION ACT AND INTRODUCTION OF CYBER LAWS 9
Consumer Protection Act – Consumer rights, Procedures for Consumer grievances redressal, Types of consumer Redressal Machineries and Forums-- Cyber crimes, IT Act 2000 and 2002, Cyber Laws, Introduction of IPR Intellectual Property Laws- Introduction, Legal Aspects of Patents, Filing of Patent Applications, Rights from Patents, Infringement of Patents, Copyright and its Ownership, Infringement of Copyright, Civil Remedies for Infringement.– Copy rights, Trade marks, Patent Act. Introduction, Right to Information Act, 2005.

TOTAL: 45 PERIODS

COURSE OUTCOMES:

1. Understand the fundamental legal principles in developing various contracts and commercial laws in the business world
2. Identify the common forms of business associations and elements of Corporate Governance

3. Develop insights regarding the laws related to industrial environment
4. Ability to understand the fundamentals of corporate tax and GST
5. Understand the role of consumer rights and cyber laws in the modern business environment

REFERENCES :

1. N. D. Kapoor, Elements of Mercantile Law, Sultan Chand and Company, India, 2017.
2. P. K. Goel, Business Law for Managers, Biztantatara Publishers, India, 2017.
3. Akhileshwar Pathak, Legal Aspects of Business, Tata McGraw Hill,, 6th Edition 2018.
4. Ravinder Kumar, Legal Aspects of Business, New Delhi: Cengage Learning, 4 th edition, 2016.
5 Sinha P.K, Dr. Vinod Singhania, Text Book of Indirect Tax, Taxman Publication, New Delhi
6. Taxmann, GST Manual with GST Law Guide & Digest of Landmark Rulings, 11th Edition, 2019
7. P. P. S. Gogna, Mercantile Law, S. Chand & Co. Ltd., India, Fourth Edition, 2015.
8. Dr. Vinod K. Singhania, Direct Taxes Planning and Management, 11 th, 2007.
9. Richard Stim, Intellectual Property- Copy Rights, Trade Marks, and Patents, Cengage Learning, 15 th edition 2017.
10. Daniel Albuquerque, Legal Aspect of Business, Oxford,2 nd edition, 2017
11. Ravinder Kumar– Legal Aspect of Business.– Cengage Learning, 4 th Edition-2016.
12.V.S. Datey, GST Ready Reckoner, 9 th edition, 2019

BA4106 **INFORMATION MANAGEMENT** **L T P C**
3 0 0 3

COURSE OBJECTIVES:

- To understand the importance of information in business
- To know about the recent information systems and technologies.

UNIT I INTRODUCTION 9

Data, Information, Information System, evolution, types based on functions and hierarchy, Enterprise and functional information systems.

UNIT II SYSTEM ANALYSIS AND DESIGN 10

System development methodologies, Systems Analysis and Design, Data flow Diagram (DFD), Decision table, Entity Relationship (ER), Object Oriented Analysis and Design(OOAD), UML diagram.

UNIT III DATABASE MANAGEMENT SYSTEMS 8

DBMS – types and evolution, RDBMS, OODBMS, RODBMS, Data warehousing, Data Mart, Data mining.

UNIT IV INTEGRATED SYSTEMS, SECURITY AND CONTROL 9

Knowledge based decision support systems, Integrating social media and mobile technologies in Information system, Security, IS Vulnerability, Disaster Management, Computer Crimes, Securing the Web.

UNIT V NEW IT INITIATIVES 9

Introduction to Deep learning, Big data, Pervasive Computing, Cloud computing, Advancements in AI, IoT, Block chain, Crypto currency, Quantum computing

TOTAL : 45 PERIODS

COURSE OUTCOMES:

1. Learn the basics of data and information system.
2. Understand the system development methodologies.
3. Understand database management system and its types.
4. Learn the various technologies in information system and its security.
5. Gains knowledge on effective applications of information systems in business.

REFERENCES:

1. Robert Schultheis and Mary Sumner, Management Information Systems – The Manager' s View, Tata McGraw Hill, 2008.
2. Kenneth C. Laudon and Jane P Laudon, Management Information Systems – Managing the Digital Firm, 15 th edition, 2018.
3. Panneerselvam. R, Database Management Systems, 3rd Edition, PHI Learning, 2018.

BA4111	INDIAN ETHOS	L T P C 0 0 4 2

COURSE OBJECTIVES:

- To enable the learners in understanding of the basic concepts of Indian Ethos and familiarise about ethical behaviour and value systems at work.

NOTE:

- The following is the list of topics suggested for preparation and presentation by students twice during the semester.
- This will be evaluated by the faculty member(s) handling the course and the final marks are consolidated at the end of the semester. No end semester examination is required for this course**.**
    1) Indian Ethos and Personality Development
    2) Work ethos and ethics for Professional Managers
    3) Indian Values, Value Systems and Wisdom for modern managers
    4) Ethos in leadership development
    5) Indian system of learning – Gurukul system of learning, Law of humility, Law of growth, Law of responsibility

TOTAL: 60 PERIODS

COURSE OUTCOMES:

1. The learners are able to apply the basic concepts of Indian ethos and value systems at work.
2. The learners can handle issues of business ethics and offer solutions in ethical perspectives
3. The learners are professionally efficient and skilful in value systems and culture
4. The learners are capable in ethically manage business towards well being of the society.
5. The learners can be socially effective in undertaking business responsibilities.

BA4112 BUSINESS COMMUNICATION (LABORATORY) **L T P C**
0 0 4 2

COURSE OBJECTIVES:

- To help the students to acquire some of the necessary skills to handle day-to-day managerial responsibilities, such as - making speeches, controlling one-to-one communication, enriching group activities and processes, giving effective presentations, writing letters, memos, minutes, reports and advertising, and maintaining one's poise in private and in public,

UNIT I INTRODUCTION AND TYPES OF BUSINESS COMMUNICATION 12

Introduction to Business Communication: Principles of effective communication, Target group profile, Barriers of Communication, Reading Skills, Listening, Feedback. - Principles of Nonverbal Communication: Professional dressing and body language. Role Playing, Debates and Quiz. Types of managerial speeches - Presentations and Extempore - speech of introduction, speech of thanks, occasional speech, theme speech. - Group communication: Meetings, group discussions. - Other Aspects of Communication: Cross Cultural Dimensions of Business Communication Technology and Communication, Ethical & Legal Issues in Business Communication.

UNIT II BUSINESS COMMUNICATION WRITING MODELS AND TOOLS 12

Business letters, Routine letters, Bad news and persuasion letters, sales letters, collection letters, Maintaining a Diary, Resume/CV , job application letters, proposals. Internal communication through - notices, circulars, memos, agenda and minutes, reports. Case Studies. Exercises on Corporate Writing, Executive Summary of Documents, Creative Writing, Poster Making, Framing Advertisements, Slogans, Captions, Preparing Press Release and Press Notes

UNIT III EFFECTIVE PRESENTATIONS 12

Principles of Effective Presentations, Principles governing the use of audiovisual media.

UNIT IV INTERVIEW SKILLS 12

Mastering the art of giving interviews in - selection or placement interviews, discipline interviews, appraisal interviews, exit interviews, web /video conferencing, tele-meeting.

UNIT V REPORT WRITING 12

Objectives of report, types of report, Report Planning, Types of Reports, Developing an outline, Nature of Headings, Ordering of Points, Logical Sequencing, Graphs, Charts, Executive Summary, List of Illustration, Report Writing.

Note: The emphasis of the entire subject should be on practical aspects.

Practical: Module 1-This module introduces both written and spoken communication skills to students to build their confidence in delivering clear and logical messages to their audience. They will develop written communication skills through crafting business messages such as business letters, emails, and meeting minutes. In addition, students will work through presentations and simulated meetings to refine their spoken communication skills, discussion techniques and people skills.

Practical - Module 2-This module builds on the foundation of Business Communication 1 and creates opportunities for students to strengthen their oral and written communication. Students will be required to enhance their presentation skills through impromptu speeches. Students will also learn how to prepare a formal business report. Job hunting and employment skills will be introduced to prepare students for a positive start to their careers. Students will be taught to write application letters and resumes. Additionally, students will learn job interview techniques through role-plays and simulations

Practical - Module 3-This practical module aims to help students be persuasive in the business world. Students will learn listening and data gathering skills to better understand their target audience's needs and requirements and persuasive skills to convince the audience to accept a new policy/suggestion/product through role-playing a boardroom presentation. Students will also be taught business networking skills including conversation techniques, dining etiquette and personal branding through role-plays and simulations.

TOTAL : 60 PERIODS

COURSE OUTCOMES:

1. Develop good managerial communication skills
2. Ability to excel in different forms of written communication required in a business context
3. Develop good presentation skills
4. In-depth understanding of interview skills
5. Ability to prepare Business reports

REFERENCES :

1. Rajendra Pal, J.S. Korlahalli ,Essentials of Business Communication by, Sultan Chand & Sons, 13th Edition
2. Meenakshi Raman, Prakash Singh ,Business Communication by, Oxford, 2 nd edition, 2012
3. Raymond V. Lesikar, Flatley, Basic Business Communication Skills for Empowering the Internet Generation by, M.E., TMGH , New Delhi , 10 th edition, 2004
4. Ludlow R , Panton ,The Essence of Effective Communications , Prentice Hall of India Pvt. Ltd. 2, 1995
5. C. S. Rayadu , Communication by, HPH, 2015
6. R. C. Sharma , Krishna Mohan ,Business Correspondence & Report Writing , Tata McGraw Hill, 5th Edition, 2017
7. Malcolm Goodale , Developing Communication Skills, 2nd Edition Professional Presentations, Cambridge University Press
8. Supplementary Reading Material Business Communication - Harvard Business Essentials Series, HBS Press
9. Adair, J , Effective Communication. , Pan Macmillan Excellence in Business Communication by Thill, J. V. &Bovee, G. L, McGraw Hill, New York. Business Communications: From Process to Product by Bowman, J.P. &Branchaw, P.P., Dryden Press, Chicago.

WEBSITES :

www.businesscommunicationskills.com
www.kcitraining.com
www.mindtools.com
www.businesscmmunication.org

BA4201 QUANTITATIVE TECHNIQUES FOR DECISION MAKING L T P C
3 0 0 3

COURSE OBJECTIVE:

- To apply quantitative techniques in modelling and solving business related problems.

UNIT I INTRODUCTION TO LINEAR PROGRAMMING (LP) 9

Relevance of quantitative techniques in management decision making. Linear Programming-formulation, solution by graphical and simplex methods (Primal - Penalty, Two Phase), Special cases. Sensitivity Analysis.

UNIT II LINEAR PROGRAMMING EXTENSIONS 9

Transportation Models (Minimising and Maximising Problems) – Balanced and unbalanced Problems – Initial Basic feasible solution by N-W Corner Rule, Least cost and Vogel's approximation methods. Check for optimality. Solution by MODI / Stepping Stone method. Case of Degeneracy. Transhipment Models.

Assignment Models (Minimising and Maximising Problems) – Balanced and Unbalanced Problems. Solution by Hungarian and Branch and Bound Algorithms. Travelling Salesman problem. Crew Assignment Models.

UNIT III DECISION AND GAME THEORIES 9

Decision making under risk – Decision trees – Decision making under uncertainty.

Game Theory-Two-person Zero sum games-Saddle point, Dominance Rule, Convex Linear Combination (Averages), methods of matrices, graphical and LP solutions.

UNIT IV INVENTORY AND REPLACEMENT MODELS 9

Inventory Models – EOQ and EBQ Models (With and without shortages), Quantity Discount Models.

Replacement Models-Individual replacement Models (With and without time value of money) – Group Replacement Models.

UNIT V QUEUING THEORY AND SIMULATION 9

Queuing Theory - single and multi-channel models – infinite number of customers and infinite calling source.

Monte Carlo simulation – use of random numbers, application of simulation techniques

TOTAL: 45 PERIODS

COURSE OUTCOMES:

To understand the applications of

1. Linear programming in product mix decisions
2. Transportation and assignment in logistics and job allocation scenarios
3. Game theory and heuristics of decision making in real time decisions
4. Inventory management and replacement models in manufacturing context
5. Queuing and simulation in real time scenario optimisation

REFERENCES:

1. N. D Vohra, Quantitative Techniques in Management, Tata Mcgraw Hill, 2010.
2. G. Srinivasan, Operations Research – Principles and Applications, 2nd edition, PHI, 2011.
3. Paneerselvam R., Operations Research, Prentice Hall of India, Fourth Print, 2008.
4. Hamdy A Taha, Introduction to Operations Research, Prentice Hall India, Tenth Edition, Third Indian Reprint 2019.
5. Bernard W.Taylor III, Introduction to Management Science, 9th Edition, Pearson Ed.
6. Frederick & Mark Hillier, Introduction to Management Science – A Modeling and case studies approach with spreadsheets, Tata Mcgraw Hill, 2010.
7. Nagraj B, Barry R and Ralph M. S Jr., Managerial Decision Modelling with Spreadsheets, Second Edition, 2007, Pearson Education.

BA4202 FINANCIAL MANAGEMENT L T P C
3 0 0 3

COURSE OBJECTIVES:

Facilitate student

- Understand the operational nuances of a Finance Manager.
- Comprehend the technique of making decisions related to finance functions.

UNIT I FOUNDATIONS OF FINANCE 9

Introduction to finance- Financial Management – Nature, scope and functions of Finance, organization of financial functions, objectives of Financial management, Major financial decisions – Time value of money – features and valuation of shares and bonds – Concept of risk and return – single asset and of a portfolio.

UNIT II INVESTMENT DECISIONS 9

Capital Budgeting: Principles and techniques - Nature of capital budgeting- Identifying relevant cash flows - Evaluation Techniques: Payback, Accounting rate of return, Net Present Value, Internal Rate of Return, Profitability Index - Comparison of DCF techniques - Concept and measurement of cost of capital - Specific cost and overall cost of capital.

UNIT III FINANCING AND DIVIDEND DECISION 9

Leverages - Operating and Financial leverage – measurement of leverages – degree of Operating & Financial leverage – Combined leverage, EBIT – EPS Analysis- Indifference point.
Capital structure – Theories – Net Income Approach, Net Operating Income Approach, MM Approach – Determinants of Capital structure.
Dividend decision- Issues in dividend decisions, Importance, Relevance & Irrelevance theories- Walter‟s – Model, Gordon‟s model and MM model. – Factors determining dividend policy – Types of dividend policies – forms of dividend.

UNIT IV WORKING CAPITAL MANAGEMENT 9

Principles of working capital: Concepts, Needs, Determinants, issues and estimation of working capital - Receivables Management - Inventory management – Cash management - Working capital finance : Commercial paper, Company deposit, Trade credit, Bank finance.

UNIT V LONG TERM SOURCES OF FINANCE 9

Indian capital market- New issues market- Secondary market - Long term finance: Shares, debentures and term loans, lease, hire purchase, venture capital financing, Private Equity.

TOTAL :45 PERIODS

COURSE OUTCOMES:

1. Identify the concepts of financial decision of an organisation
2. Recognize the time value of money
3. Learn the capital budgeting and cost of capital techniques
4. Understand how to decide the decision of capital structure and distribution of dividend
5. Assess the short-term and long-term sources of finance

REFERENCES :

1. I M. Pandey Financial Management, Vikas Publishing House Pvt. Ltd., 11th edition, 2018
2. M.Y. Khan and P.K.Jain Financial management, Text, Problems and cases Tata McGraw Hill, 8th edition, 2017.
3. AswathDamodaran, Corporate Finance Theory and practice, John Wiley & Sons, 2011.
4. James C. Vanhorne –Fundamentals of Financial Management– PHI Learning,13th Edition, 2014.
5. Brigham, Ehrhardt, Financial Management Theory and Practice, 14th edition, Cengage Learning 2015.
6. Prasanna Chandra, Financial Management, 9th edition, Tata McGraw Hill, 2017.
7. Srivatsava, Mishra, Financial Management, Oxford University Press, 2012.

BA4203 HUMAN RESOURCE MANAGEMENT L T P C
3 0 0 3

COURSE OBJECTIVE:

- To provide knowledge about management issues related to staffing, training, performance, compensation, human factors consideration and compliance with human resource requirements.

UNIT I PERSPECTIVES IN HUMAN RESOURCE MANAGEMENT 9

Evolution of human resource management – The importance of the human capital – Role of human resource manager –Challenges for human resource managers - trends in Human resource policies – Computer applications in human resource management – Human resource accounting and audit.

UNIT II HUMAN RESOURCE PLANNING AND RECRUITMENT 9

Importance of Human Resource Planning – Forecasting human resource requirement –matching supply and demand - Internal and External sources- Organizational Attraction-. Recruitment, Selection, Induction and Socialization- Theories, Methods and Process.

UNIT III TRAINING AND DEVELOPMENT 9

Types of training methods –purpose- benefits- resistance. Executive development programme – Common practices - Benefits – Self development – Knowledge management.

UNIT IV EMPLOYEE ENGAGEMENT 9

Compensation plan – Reward – Motivation – Application of theories of motivation – Career management – Mentoring - Development of mentor – Protégé relationships- Job Satisfaction, Employee Engagement, Organizational Citizenship Behavior: Theories, Models.

UNIT V PERFORMANCE EVALUATION AND CONTROL 9

Method of performance evaluation – Feedback – Industry practices. Promotion, Demotion, Transfer and Separation – Implication of job change. The control process – Importance – Methods – Requirement of effective control systems grievances – Causes – Implications – Redressal methods.

TOTAL: 45 PERIODS

COURSE OUTCOMES:

1. Students would have gained knowledge on the various aspects of HRM
2. Students will gain knowledge needed for success as a human resources professional.
3. Students will develop the skills needed for a successful HR manager
4. Students would be prepared to implement the concepts learned in the workplace.
5. Students would be aware of the emerging concepts in the field of HRM

REFERENCES :

1. Gary Dessler and Biju Varkkey, Human Resource Management, 14th Edition, Pearson Education Limited, 2015.
2. David A. Decenzo, Stephen.P.Robbins, and Susan L. Verhulst, Human Resource Management, Wiley, International Student Edition, 11th Edition, 2014.
3. Luis R.Gomez-Mejia, David B.Balkin, Robert L Cardy. Managing Human Resource. PHI Learning. 2012
4. Bernadin , Human Resource Management ,Tata Mcgraw Hill ,8th edition 2012.
5. Wayne Cascio, Managing Human Resource, McGraw Hill, 2015.
6. Ivancevich, Human Resource Management, McGraw Hill 2012.
7. Uday Kumar Haldar, Juthika Sarkar. Human Resource management. Oxford. 2012

BA4204 **OPERATIONS MANAGEMENT** **LT P C**
3 0 0 3

COURSE OBJECTIVE:

- To provide a broad introduction to the field of operations management and explain the concepts, strategies, tools and techniques for managing the transformation process that can lead to competitive advantage.

UNIT I INTRODUCTION TO OPERATIONS MANAGEMENT 9

Operations Management – Nature, Importance, historical development, transformation processes, differences between services and goods, a system perspective, functions, challenges, current priorities, recent trends. Operations Strategy – Strategic fit , framework. Productivity; World-class manufacturing practices

UNIT II OPERATIONS AND THE VALUE CHAIN 9

Capacity Planning – Long range, Types, Developing capacity alternatives, tools for capacity planning. Facility Location – Theories, Steps in Selection, Location Models. Sourcing and procurement - Strategic sourcing, make or buy decision, procurement process, managing vendors.

UNIT III DESIGNING OPERATIONS 9

Product Design - Criteria, Approaches. Product development process - stage-gate approach - tools for efficient development. Process - design, strategy, types, analysis. Facility Layout – Principles, Types, Planning tools and techniques.

UNIT IV PLANNING AND CONTROL OF OPERATIONS 9

Demand Forecasting – Need, Types, Objectives and Steps - Overview of Qualitative and Quantitative methods. Operations planning - Resource planning - Inventory Planning and Control. Operations Scheduling - Theory of constraints - bottlenecks, capacity constrained resources, synchronous manufacturing

UNIT V QUALITY MANAGEMENT 9

Definitions of quality, The Quality revolution, quality gurus; TQM philosophies; Quality management tools, certification and awards. Lean Management - philosophy, elements of JIT manufacturing, continuous improvement. Six sigma.

TOTAL: 45 PERIODS

COURSE OUTCOMES:

1. Understanding of the evolution of operations management practices and world class manufacturing processes
2. Knowledge about capacity planning, strategic sourcing and procurement in organizations
3. Enhances the understanding of product development and design process
4. Ability to forecast demand and overcome bottlenecks
5. Provides insight to Quality management tools and practices.

REFERENCES :

1. Richard B. Chase, Ravi Shankar, F. Robert Jacobs, Operations and Supply Chain Management, McGraw Hill Education (India) Pvt. Ltd, 14th Edition, 2014.
2. Mahadevan B, Operations management: Theory and practice. Pearson Education India; 2015.
3. William J Stevenson, Operations Management, Tata McGraw Hill, 9th Edition, 2009.
4. Russel and Taylor, Operations Management, Wiley, 5th Edition, 2006.
5. Norman Gaither and Gregory Frazier, Operations Management, South Western Cengage Learning,9 th edition, 2015.
6. Cecil C. Bozarth, Robert B. Handfield, Introduction to Operations and Supply Chain Management, Pearson, 4th Edition, 2016.
7. Panneerselvam. R, Production and Operations Management, 3rd Edition,. PHI Learning, 2012.

BA4205 BUSINESS RESEARCH METHODS L T P C
3 0 0 3

COURSE OBJECTIVE:

- To make the students of tourism understand the principles of scientific methodology in business enquiry, develop analytical skills of business research and to prepare scientific business reports.

UNIT I INTRODUCTION 9

Business Research – Definition and Significance – the research process – Types of Research – Exploratory and causal Research – Theoretical and empirical Research – Cross –Sectional and time – series Research – Research questions / Problems – Research objectives – Research hypotheses – characteristics – Research in an evolutionary perspective – the role of theory in research.

UNIT II RESEARCH DESIGN AND MEASUREMENT 9

Research design – Definition – types of research design – exploratory and causal research design – Descriptive and experimental design – different types of experimental design – Validity of findings – internal and external validity – Variables in Research – Measurement and scaling – Different scales – Construction of instrument – Validity and Reliability of instrument.

UNIT III DATA COLLECTION 9

Types of data – Primary Vs Secondary data – Methods of primary data collection – Survey Vs Observation – Experiments – Construction of questionnaire and instrument – Types of Validity – Sampling plan – Sample size – determinants optimal sample size – sampling techniques – Sampling methods.

UNIT IV DATA PREPARATION AND ANALYSIS 9

Data Preparation – editing – Coding –Data entry – Validity of data – Qualitative Vs Quantitative data analyses – Applications of Bivariate and Multivariate statistical techniques, Factor analysis, Discriminant analysis, Cluster analysis, Multiple regression and Correlation, Multidimensional scaling – Conjoint Analysis – Application of statistical software for data analysis.

UNIT V REPORT DESIGN, WRITING AND ETHICS IN BUSINESS RESEARCH 9

Research report –Types – Contents of report – need for executive summary – chapterization – contents of chapter – report writing – the role of audience – readability – comprehension – tone – final proof – report format – title of the report – ethics in research – Ethics in research – Subjectivity and Objectivity in research.

TOTAL : 45 PERIODS

COURSE OUTCOMES:

1. Students will understand and appreciate scientific inquiry
2. Students would know to write research proposals
3. The students would be able to undertake a systematic outlook towards business situations for the purpose of objective decision making, and the method of conducting scientific inquiry to solve organizational problems
4. Students would be able to analyze data and find solutions to the problems.
5. Students could prepare research reports

REFERENCES :

1. Donald R. Cooper, Pamela S. Schindler and J K Sharma, Business Research methods, 11th Edition, Tata Mc Graw Hill, New Delhi, 2012.
2. Alan Bryman and Emma Bell, Business Research methods, 3rd Edition, Oxford University Press, New Delhi, 2011.

3. Uma Sekaran and Roger Bougie, Research methods for Business, 5th Edition, Wiley India, New Delhi, 2012.
4. William G Zikmund, Barry J Babin, Jon C.Carr, AtanuAdhikari,Mitch Griffin, Business Research methods, A South Asian Perspective, 8th Edition, Cengage Learning, New Delhi, 2012.
5. Panneerselvam. R, Research Methodology, 2nd Edition, PHI Learning, 2014.

BA4206 BUSINESS ANALYTICS L T P C
3 0 0 3

COURSE OBJECTIVES:

Learn to

1. Use business analytics for decision making
2. To apply the appropriate analytics and generate solutions
3. Model and analyse the business situation using analytics.

UNIT I INTRODUCTION TO BUSINESS ANALYTICS (BA) 9

Business Analytics - Terminologies, Process, Importance, Relationship with Organisational Decision Making, BA for Competitive Advantage.

UNIT II MANAGING RESOURCES FOR BUSINESS ANALYTICS 9

Managing BA Personnel, Data and Technology. Organisational Structures aligning BA. Managing Information policy, data quality and change in BA.

UNIT III DESCRIPTIVE ANALYTICS 9

Introduction to Descriptive analytics - Visualising and Exploring Data - Descriptive Statistics - Sampling and Estimation - Probability Distribution for Descriptive Analytics - Analysis of Descriptive analytics

UNIT IV PREDICTIVE ANALYTICS 9

Introduction to Predictive analytics - Logic and Data Driven Models - Predictive Analysis Modeling and procedure - Data Mining for Predictive analytics. Analysis of Predictive analytics

UNIT V PRESCRITIVE ANALYTICS 9

Introduction to Prescriptive analytics - Prescriptive Modeling - Non Linear Optimisation - Demonstrating Business Performance Improvement.

TOTAL: 45 PERIODS

COURSE OUTCOMES:

1. Ability to understand the role of Business Analytics in decision making
2. Ability to identify the appropriate tool for the analytics scenario
3. Ability to apply the descriptive analytics tools and generate solutions
4. Understanding of Predictive Analytics and applications
5. Knowledge of Prescriptive Analytics and demonstrating business process improvement

REFERENCES

1. Marc J. Schniederjans, Dara G. Schniederjans and Christopher M. Starkey, " Business Analytics Principles, Concepts, and Applications - What, Why, and How" , Pearson Ed, 2014
2. Christian Albright S and Wayne L. Winston, "Business Analytics - Data Analysis and Decision Making" , Fifth edition, Cengage Learning, 2015.
3. James R. Evans, "Business Analytics - Methods, Models and Decisions", Pearson Ed, 2012.

BA4207 MARKETING MANAGEMENT L T P C
3 0 0 3

COURSE OBJECTIVES:

- To understand the changing business environment and the fundamental premise underlying market driven strategies.
- To identify the indicators of management thoughts and practices.

UNIT I INTRODUCTION 9

Defining Marketing − Core concepts in Marketing – Evolution of Marketing − Marketing Planning Process − Scanning Business environment: Internal and External − Value chain − Core Competencies – PESTEL − SWOT Analysis − Marketing interface with other functional areas – Production, Finance, Human Relations Management, Information System − Marketing in global environment – International Marketing − Rural Marketing − Prospects and Challenges.

UNIT II MARKETING STRATEGY 9

Marketing strategy formulations – Key Drivers of Marketing Strategies - Strategies for Industrial Marketing – Consumer Marketing − Services marketing – Competition Analysis − Analysis of consumer and industrial markets − Influence of Economic and Behavioral Factors − Strategic Marketing Mix components.

UNIT III MARKETING MIX DECISIONS 9

Product planning and development – Product life cycle – New product Development and Management – Defining Market Segmentation – Targeting and Positioning − Brand Positioning and Differentiation – Channel Management – Managing Integrated Marketing Channels − Managing Retailing, Wholesaling and Logistics − Advertising and Sales Promotions – Pricing Objectives, Policies and Methods

UNIT IV BUYER BEHAVIOUR 9

Understanding Industrial and Consumer Buyer Behavior − Influencing factors – Buyer Behaviour Models – Online buyer behaviour − Building and measuring customer satisfaction – Customer relationships management – Customer acquisition, Retaining, Defection − Creating Long Term Loyalty Relationships.

UNIT V MARKETING RESEARCH & TRENDS IN MARKETING 9

Marketing Information System – Marketing Research Process – Concepts and applications: Product – Advertising – Promotion – Consumer Behaviour – Retail research – Customer driven

organizations - Cause related marketing − Ethics in marketing – Online marketing trends - social media and digital marketing

TOTAL: 45 PERIODS

COURSE OUTCOMES:

1. Applied knowledge of contemporary marketing theories to the demands of business and management practice.
2. Enhanced knowledge of marketing strategies for consumer and industrial marketing
3. Deep understanding of choice of marketing mix elements and managing integrated marketing channels
4. Ability to analyze the nature of consumer buying behaviour
5. Understanding of the marketing research and new trends in the arena of marketing

REFERENCES:

1. Philip T. Kotler and Kevin Lane Keller, Marketing Management, Prentice Hall India, 15th Edition, 2017.
2. KS Chandrasekar, “Marketing management-Text and Cases”, Tata McGraw Hill Education, 2012
3. Lamb, Hair, Sharma, Mc Daniel– Marketing – An Innovative approach to learning and teaching-
   A south Asian perspective, Cengage Learning, 2012.
4. Paul Baines, Chris Fill, Kelly Page, Marketing, Asian edition, Oxford University Press,5 th edition, 2019.
5. Ramasamy, V.S, Namakumari, S, Marketing Management: Global Perspective Indian Context, Macmillan Education, New Delhi, 6 th edition, 2018.
6. A. NAG, Marketing successfully- A Professional Perspective, Macmillan 2008.
7. Micheal R.Czinkota, Masaaki Kotabe, Marketing Management, Vikas Thomson Learning, 2nd edition 2006.
8. Philip Kotler , Gay Armstrong, Prafulla Agnihotri, Principles of marketing, 7 th edition, 2018.

BA4211	**BUSINESS ETHICS (SEMINAR)**	**L T P C**
		0 0 4 2

COURSE OBJECTIVE:

- To enable the learners to have exposure on business ethics and ethical business perspectives.

NOTE :

- The following is the list of topics suggested for preparation and presentation bystudents twice during the semester.
- This will be evaluated by the faculty member(s) handling the course and the final marks are consolidated at the end of the semester. No end semester examination is required for this course**.**
  1) Individual Culture and Ethics

2) Ethical codes of conduct and value Systems
3) Loyalty and Ethical Behaviour, Ethical decision making
4) Ethical business issues and solutions
5) Corporate Social Responsibilities of Business

TOTAL: 60 PERIODS

COURSE OUTCOMES:

1. The learners can handle issues of business ethics and offer solutions ethical perspectives
2. The learners are able to apply the basic concepts of Indian ethos and value systems at work.
3. The learners can handle issues of business ethics and offer solutions in ethical perspectives
4. The learners are professionally efficient and skilful in value systems and culture
5. The learners are capable in ethically manage business towards well being of the society.
6. The learners can be socially effective in undertaking business responsibilities.

BA4212 DATA ANALYSIS AND BUSINESS MODELING (LABORATORY) LT P C 0 0 4 2

OBJECTIVE :

- to have hands-on experience on data analysis for business modeling.

S.No.	Exp. No.	Details of experiments Name	Duration
1	1	Descriptive Statistics	4
2	2	Parametric Tests	4
3	3	Non-parametric Tests	4
4	4	Correlation & Regression	4
5	5	Forecasting	4
6	-	Extended experiment – 1	4
7	6	Portfolio Selection	4
8	7	Risk Analysis & Sensitivity Analysis	4
9	8	Revenue Management	4
10	-	Extended experiment – 2	4
11	9	Transportation & Assignment	4

12	10	Networking Models	4
13	11	Queuing Theory	4
14	12	Inventory Models	4
15	-	Extended experiments – 3	4

- Spreadsheet Software and Data Analysis Tools

TOTAL: 60 PERIODS

COURSE OUTCOMES:

1. Deep knowledge about the nature of data and conducting hypothesis testing using various data analysis techniques
2. Facilitates to identify the relationship between variables using data analytical tools
3. Provides understanding about forecasting in real time business world using analytical tools
4. Ability to conduct Risk and sensitivity analysis and portfolio selection based on business data
5. Enhances knowledge about networking, inventory models and queuing theory using data analytical tools

REFERENCES:

1. David R. Anderson, et al, "An Introduction to Management Sciences: Quantitative approaches to Decision Making", (13th edition) South-Western College Pub, 2011.
2. William J. Stevenson, CeyhunOzgur, "Introduction to Management Science with Spreadsheet", Tata McGraw Hill, 2009.
3. Hansa Lysander Manohar, "Data Analysis and Business Modelling using Microsoft Excel" PHI, 2017.
4. David M. Levine et al, “Statistics for Managers using MS Excel" (6th Edition) Pearson,2010.
5. Minnick, C. WebKit for Dummies. John Wiley & Sons, (2012).

BS4301 INTRODUCTION TO ARTIFICIAL INTELLIGENCE LT P C
3 0 0 3

COURSE OBJECTIVE:

- To learn the features of Artificial Intelligence
- To understand the importance of Machine Learning and its applications
- To know about the functions of Python programming

UNIT I INTRODUCTION TO ARTIFICIAL INTELLIGENCE 9

Definition – Future of Artificial Intelligence –Characteristic of Intelligent Agents – Typical Intelligent Agents –Problem Solving Approach to Typical AI problems. Problem solving by Searching: Uninformed and informed strategies and implementation; Path planning; Constraint Satisfaction Problems (CSP).

UNIT II KNOWLEDGE REPRESENTATION 9

Logical Agents– Propositional and first order Predicate logic-–inference– Knowledge representation and Automated Planning– Uncertain Knowledge and Reasoning: Quantifying uncertainty– probabilistic reasoning;

UNIT III MACHINE LEARNING & AI APPLICATIONS 9

Machine learning basics - Learning from examples - forms of learning (supervised, unsupervised, reinforcement learning) -simple models (linear & logistic regression) - Deep Learning AI applications: Natural Language Processing - Language Models – Machine Translation; Speech Recognition; Computer Vision - Image classification.

UNIT IV PYTHON PROGRAMMING: INTRODUCTION 9

The Python Programming Language, History, features, Installing Python, Running Python program, Debugging: Syntax Errors, Runtime Errors, Semantic Errors – Experimental Debugging, Formal and Natural Languages, The Difference between Brackets, Braces, and Parentheses. Variables and Expressions Values and Types– Variables, Variable & Keywords - Type conversion – Operator and Operands– Expressions–Interactive –Mode and script Mode, Order of Operations. Conditional Statements: if, if- else, nested if –else -Looping: for, while, nested-loops. Control statements: Terminating loops, skipping specific conditions.

UNIT V FUNCTIONS 9

Function Calls, Type Conversion Functions, Math Functions, Adding New Functions, Definitions and Uses, Flow of Execution, Parameters and Arguments, Variables and Parameters. Strings: Strings, String Slices, Strings are immutable, and Searching–Looping–and counting String methods – the in operator–String Comparison – String operations Lists: Values and Accessing Elements, Lists are mutable, traversing a List, Deleting elements from List–, Built-in List Operators, Concatenation, In Operator, Built-in List functions and methods.

TOTAL:45 PERIODS

COURSE OUTCOMES:

- To facilitate objective solutions in Artificial Intelligence
- To understand and solve the probabilistic reasoning
- To develop skills in Python Programming Language
- To enable the students to apply the functions of Python Programming

REFERENCES:

1. S. Russell and P. Norvig, “Artificial Intelligence: A Modern Approach,Prentice Hall,.
2. M. Tim Jones, “Artificial Intelligence: A Systems Approach (ComputerScience)”,Jones and Bartlett Publishers, Inc.; 1st Edition, 2008.
3. Nils J. Nilsson, “The Quest for Artificial Intelligence”,Cambridge University Press,2009.
4. Python GUI programming Cookbook -Burkahard A Meier, PacktPublication, 2nd Edition.
5. Barry, P. (2016). Head first Python: A brain-friendly guide. “ O’Reilly Media, Inc.”. Lutz, M. (2013). Learning python: Powerful object-oriented programming. “O’Reilly Media, Inc.”.

BS4302 FUNDAMENTALS OF DATA SCIENCE LT P C
3 0 0 3

COURSE OBJECTIVE:

- Familiarize the concepts of Neural network
- To understand the Fuzzy sets
- Impart knowledge about concepts of Tree learning

UNIT I INTRODUCTION 9

Basic concepts-single layer perceptron-Multi layer perceptron-Adaline-Madaline- Learning rules Supervised learning-Back propagation networks-Training algorithm, Advanced algorithms-Adaptive network- Radial basis network modular network- Applications

UNIT II LEARNING 9

Introduction- unsupervised learning -Competitive learning networks-Kohonen self organizing networks- Learning vector quantisation - Hebbian learning – Hopfield network- Content addressable nature, Binary Hopfield network, Continuous Hopfield network Travelling Salesperson problem - Adaptive resonance theory –Bidirectional Associative Memory Principle component Analysis

UNIT III FUZZY SETS 9

Introduction – crisp sets an overview – the notion of fuzzy sets – Basic concepts of fuzzy sets – classical logic an overview – Fuzzy logic. Operations on fuzzy sets - fuzzy complement –fuzzy union – fuzzy intersection – combinations of operations – general aggregation operations

UNIT IV RELATIONS 9

Crisp and fuzzy relations – binary relations – binary relations on a single set– equivalence and similarity relations – Compatibility or tolerance relations– orderings – Membership functions – methods of generation – defuzzification methods

UNIT V TREE LEARNING 9

Adaptive Neuro Fuzzy based inference systems – classification and regression trees: decision tress, Cart algorithm – Data clustering algorithms: K means clustering, Fuzzy C means clustering, Mountain clustering, Subtractive clustering – rule base structure identification –Neuro fuzzy control: Feedback Control Systems, Expert Control, Inverse Learning, Specialized Learning, Back propagation through Real –Time Recurrent Learning.

TOTAL : 45 PERIODS

COURSE OUTCOMES:

- Enhances the understanding of Neural network
- Knowledge about capacity of Fuzzy logic
- Provides insight to Neuro Fuzzy based inference systems

REFERENCES:

1. Neuro Fuzzy and Soft computing, Jang J.S.R.,Sun C.T and Mizutani E – Pearson education, 2004
2. Fundamentals of Neural Networks, LaureneFauseett, Prentice Hall India, New Delhi,1994.
3. Fuzzy Logic Engineering Applications, Timothy J.Ross, McGrawHill,NewYork,1997.
4. Neural networks,Fuzzy logics,and Genetic algorithms, S.Rajasekaran and G.A.VijayalakshmiPai Prentice Hall of India,2003
5. Fuzzy Sets and Fuzzy Logic, George J.Klir and Bo Yuan, Prentice Hall Inc., New Jersey, 1995.

BS4303 **ARTIFICIAL NEURAL NETWORKS** **LT P C**
3 0 0 3

COURSE OBJECTIVE:

- Familiarize the concepts of Neural network
- To understand the Fuzzy sets
- Impart knowledge about concepts of Tree learning

UNIT I INTRODUCTION **9**

Basic concepts-single layer perceptron-Multi layer perceptron-Adaline-Madaline- Learning rules Supervised learning-Back propagation networks-Training algorithm, Advanced algorithms-Adaptive network- Radial basis network modular network- Applications

UNIT II LEARNING **9**

Introduction- unsupervised learning -Competitive learning networks-Kohonen self organizing networks- Learning vector quantisation - Hebbian learning – Hopfield network- Content addressable nature, Binary Hopfield network, Continuous Hopfield network Travelling Salesperson problem - Adaptive resonance theory –Bidirectional Associative MemoryPrinciple component Analysis

UNIT III FUZZY SETS **9**

Introduction – crisp sets an overview – the notion of fuzzy sets – Basic concepts of fuzzy sets – classical logic an overview – Fuzzy logic. Operations on fuzzy sets - fuzzy complement –fuzzy union – fuzzy intersection – combinations of operations – general aggregation operations

UNIT IV RELATIONS **9**

Crisp and fuzzy relations – binary relations – binary relations on a single set– equivalence and similarity relations – Compatibility or tolerance relations– orderings – Membership functions – methods of generation – defuzzification methods

UNIT V TREE LEARNING **9**

Adaptive Neuro Fuzzy based inference systems – classification and regression trees: decision tress, Cart algorithm – Data clustering algorithms: K means clustering, Fuzzy C means clustering, Mountain clustering, Subtractive clustering – rule base structure identification –Neuro fuzzy control: Feedback Control Systems, Expert Control, Inverse Learning, Specialized Learning, Back propagation through Real –Time Recurrent Learning.

TOTAL : 45 PERIODS.

COURSE OUTCOMES:

- Enhances the understanding of Neural network
- Knowledge about capacity of Fuzzy logic
- Provides insight to Neuro Fuzzy based inference systems

REFERENCES:

1. Neuro Fuzzy and Soft computing, Jang J.S.R.,Sun C.T and Mizutani E – Pearson education, 2004
2. Fundamentals of Neural Networks, LaureneFauseett, Prentice Hall India, New Delhi,1994.
3. Fuzzy Logic Engineering Applications, Timothy J.Ross, McGrawHill,NewYork,1997.
4. Neural networks,Fuzzy logics,and Genetic algorithms, S.Rajasekaran and G.A.VijayalakshmiPai Prentice Hall of India,2003
5. Fuzzy Sets and Fuzzy Logic, George J.Klir and Bo Yuan, Prentice Hall Inc., New Jersey, 1995.

BS4304	MACHINE LEARNING METHODOLOGIES	LT P C 3 0 0 3

COURSE OBJECTIVE:

- To understand the concept of Baysen Decision
- To determine the concepts of clustering Algorithm

UNIT I BAYESIAN DECISION THEORY AND NORMAL DISTRIBUTION

Machine perception -feature extraction -classification, clustering, linear and logistic regression -Types of learning -Bayesian decision theory -classifiers, discriminant functions, and decision surfaces -univariate and multivariate normal densities -Bayesian belief networks

UNIT II CLASSIFICATION ALGORITHMS

Perceptron and backpropagation neural network -k-nearest-neighbor rule. Support vector machine: multicategory generalizations -Regression. Decision trees: classification and regression tree -random forest.

UNIT III COMPONENT ANALYSIS AND CLUSTERING ALGORITHMS 9

Principal component analysis -Linear discriminant analysis -Independent component analysis. k-means clustering -fuzzy k-means clustering -Expectation-maximization algorithm-Gaussian mixture models -auto associative neural network.

UNIT IV DEEP LEARNING ARCHITECTURES AND APPLICATIONS 9

Convolution neural network (CNN) -Layers in CNN -CNN architectures. Recurrent Neural Network - Applications: Speech-to-text conversion-image classification-time series prediction.

UNIT V COMBINING MULTIPLE LEARNERS

Generating diverse learners -model combination schemes -voting -error-correcting output codes -bagging - boosting -mixture of experts revisited -stacked generalization -fine-tuning an ensemble –cascading.

TOTAL: 45 PERIODS

COURSE OUTCOME

- To facilitate objective solutions in neural network
- To understand and solve the clustering algorithm
- To enable the Deep learning Process

TEXT BOOKS:

1. Francois Chollet, Deep Learning with Python, Manning Publications, Shelter Island, New York, 2018.
2. Tom M. Mitchell, ―Machine Learning‖, McGraw-Hill Education (India) Private Limited, 2013.

REFERENCE BOOKS

1. Navin Kumar Manaswi, Deep Learning with Applications using Python, Apress, New York, 2018.
2. Ethem Alpaydin, Introduction to Machine Learning, 3rd Edition, MIT Press, 2014.

BS4311	DEEP LEARNING (PRACTICAL)	L T P C 0 0 4 2

LIST OF EXPERIMENTS

1. Build a deep neural network model start with linear regression using
    - Single Variable
    - Multiple variables
2. Write a program to convert:
    - Speech into text
    - Text into speech
    - Video into frames
3. Build a feed forward neural network for prediction of logic gates.
4. Write a program for character recognition using:
    - CNN
    - RNN
5. Write a program to predict a caption for a sample image using:
    - LSTM
    - CNN
6. Write a program to develop:
    - Autoencoders using MNIST Handwritten Digits.
    - GAN for Generating MNIST Handwritten Digits.

REFERENCE:

1. Navin Kumar Manaswi, Deep lerning with Applications using Python Chatbots and Face, Object, and Speech Recognition with Tensor Flow and Keras, Apress, 2018.
2. Ian GoodFellow, Yoshua Bengio, Aaron Courville, “Deep Learning”,MIT Press,2016.
3. Josh Patterson and Adam Gibson,”Deep Learning: A practitioner’s approach”, O’ Reilly Media,First Edition, 2017.

BA4032 ENTREPRENEURSHIP DEVELOPMENT L T P C
3 0 0 3

COURSE OBJECTIVES:

- To equip and develop the learners entrepreneurial skills and qualities essential to undertake business.
- To impart the learners entrepreneurial competencies needed for managing business efficiently and effectively.

UNIT I ENTREPRENEURAL COMPETENCE 9

Entrepreneurship concept – Entrepreneurship as a Career – Entrepreneurial Personality - Characteristics of Successful Entrepreneurs – Knowledge and Skills of an Entrepreneur.

UNIT II ENTREPRENEURAL ENVIRONMENT 9

Business Environment - Role of Family and Society - Entrepreneurship Development Training and Other Support Organisational Services - Central and State Government Industrial Policies and Regulations.

UNIT III BUSINESS PLAN PREPARATION 9

Sources of Product for Business - Prefeasibility Study - Criteria for Selection of Product - Ownership - Capital Budgeting- Project Profile Preparation - Matching Entrepreneur with the Project - Feasibility Report Preparation and Evaluation Criteria.

UNIT IV LAUNCHING OF SMALL BUSINESS 9

Finance and Human Resource Mobilisation - Operations Planning - Market and Channel Selection - Growth Strategies - Product Launching – Incubation, Venture capital, Start-ups.

UNIT V MANAGEMENT OF SMALL BUSINESS 9

Monitoring and Evaluation of Business - Business Sickness - Prevention and Rehabilitation of Business Units - Effective Management of small Business - Case Studies.

TOTAL : 45 PERIODS

COURSE OUTCOMES:

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

1. The learners will gain entrepreneurial competence to run the business efficiently.
2. The learners are able to undertake businesses in the entrepreneurial environment
3. The learners are capable of preparing business plans and undertake feasible projects.
4. The learners are efficient in launching and develop their business ventures successfully
5. The learners shall monitor the business effectively towards growth and development..

REFERENCES:

1. S.S.Khanka, Entrepreneurial Development, S.Chand and Company Limited, New Delhi, 2016.
2. R.D.Hisrich, Entrepreneurship, Tata McGraw Hill, New Delhi, 2018.
3. Rajeev Roy ,Entrepreneurship, Oxford University Press, 2nd Edition, 2011.
4. Donald F Kuratko,T.V Rao. Entrepreneurship: A South Asian perspective. Cengage Learning, 2012.
5. Dr. Vasant Desai, “Small Scale Industries and Entrepreneurship”, HPH,2006.
6. Arya Kumar. Entrepreneurship, Pearson,2012.
7. Prasanna Chandra, Projects – Planning, Analysis, Selection, Implementation and Reviews, Tata McGraw-Hill, 8 th edition ,2017.

BA4033 EVENT MANAGEMENT L T P C
3 0 0 3

COURSE OBJECTIVE:

- This course is designed to provide an introduction to the principles of event management. The course aims to impart knowledge on the various events and how these events can be organized successfully.

UNIT I EVENT CONTEXT 9

History & Evolution – Types of events – MICE – Types of Meeting, Trade Shows, Conventions, Exhibitions- Structure of event industry – Event Management as a profession – Perspectives on event : Government, Corporate & Community – Code of Ethics.

UNIT II EVENT PLANNING & LEGAL ISSUES 9

Conceptualizing the event – Host, sponsor, Media, Guest, Participants , Spectators – Crew – Design of concept – Theme and content development – Visualization – Event objectives – Initial planning – Budgeting – Event design and budget checklist – Preparation of functional sheets – Timing – Contracts and Agreements – Insurance, Regulation, Licence and Permits – Negotiation.

UNIT III EVENT MARKETING 9

Role of Strategic Marketing Planning - Pricing – Marketing Communication Methods & budget – Elements of marketing communication – Managing Marketing Communication – Role of Internet – Sponsorship – Event sponsorship – Strategy – Managing Sponsorships – Measuring & Evaluating sponsorship.

UNIT IV EVENT OPERATION 9

Site Selection – Types of location – Venue Requirements – Room, Stage, Audi-Visual, Lighting, Performers, Decors, Caterer, Photography & Videography – Protocols – Guest list – Guest demographics – Children at event – Invitation – Media – Freelance Event Operation – Road show - Food & Beverage – Entertainment – Event Logistics – Supply of facilities – Onsite logistics – Control of event logistics – Evaluation & Logistics.

UNIT V SAFETY & EVENT EVALUATION 9

Risk assessment – Safety officer, Medical Manager – Venue, Structural safety – Food safety – Occupational safety – Fire Prevention – Sanitary facilities – Vehicle traffic – Waste Management. Event Impact – Event Evaluation Process – Service Quality - Customer Satisfaction.

TOTAL: 45 PERIODS

COURSE OUTCOMES:

1. Learning about structure and code of ethics of events
2. Exploring and getting to know about event planning and regulations
3. Understand about event marketing, planning and strategies
4. Enhance professional skills in event management
5. Analyse the safety measure of event management

REFERENCES:

1. Lynn Van Der Wagen, Event Management for Tourism, Cultural Business & Sporting Events, 4 th Edition, Pearson Publications, 2014.
2. Lynn Van Der Wagen, & Brenda R. Carlos ,Sucessful Event Management.
3. Judy Allen, Event Planning 2nd Edition, Wiley & Sons, Canada, 2014.
4. G.A.J. Bowdin, Events Management ,Elseiver Butterworth
5. John Beech, Sebastian Kaiser & Robert Kaspar, The Business of Events Management, Pearson Publication, 2014.
6. Judy, Event Planning Ethics and Etiquette: A Principled Approach to the Business of Special Event Management, 2014.
7. Shannon Kilkenny, The complete guide to successful event planning.
8. Julia Rutherford Silvers, Professional Event Coordination, The Wiley Event Management Series.
9. Allison ,The Event Marketing Handbook: Beyond Logistics & Planning.

BS4001 **ADVANCED MACHINE LEARNING** **L T P C**
3 0 0 3

COURSE OBJECTIVES:

- Understand the fundamentals of ensemble methods and framework for choosing the right model
- Identify model performance
- Recognize concepts of hyper parameter tuning
- Comprehend the concepts of regularization and gradient descent to improve model fitting
- Be aware of support vector machine algorithm to create prediction models

UNIT I

Fundamentals of Ensemble methods - Fundamentals of Ensemble methods - Using committees of multiple hypotheses- Bagging- Boosting- Decorate- Active learning with ensembles- Framework for choosing the right model

UNIT II

Over fitting - Under fitting - Bias and Variance trade- off – Regularization concepts - L1 and L2 Regularization - Ridge regression - Lasso regression - Elastic netregression.

UNIT III

What is a hyper parameter - Need for hyper parameter tuning - Steps involved in hyperparameter tuning - Approaches to hyper parameter tuning - Grid search - Random search - Automated hyper parameter tuning - Bayesian optimization.

UNIT IV

Fundamentals of Gradient Descent - Intuition and steps in Gradient Descent - Cost function - How it works? - Evaluation of coefficients - Types of Gradient Descent : Batch Gradient Descent - Stochastic Gradient Descent - Best practices.

UNIT V

Basics of Support Vector Machines (SVM) - Basics of Support Vector Machines (SVM) - How does it work? - Maximal-Margin Classifier - Soft Margin Classifier – Kernels - Implementing SVM in Python - Tune parameters - Advantages and limitations of SVM.

REFERENCES:

1. Evolutionary Machine Learning Techniques: Algorithms and Applications, Seyedali Mirjalili, Hossam Faris, Ibrahim Aljarah, 1st Edition,Springer 2020.
2. Mastering Machine Learning Algorithms, Giuseppe Bonaccorso, 2nd Edition, Packt Publishing 2020.
3. Pattern Recognition and Machine Learning, Christopher M Bishop, Springer 2011.

COURSE OUTCOMES:

- Understand the ensemble methods and Evaluate the right model
- Analyze the performance of model
- Examine hyper parameter tuning
- Apply regularization and gradient descent to improve model fitting
- Create prediction models by using vector machine algorithm

BS4002	DEEP LEARNING – I	L T P C 3 0 0 3

COURSE OBJECTIVES:

- Learn deep learning fundamentals through cognitive science approach.
- The prerequisites required for hands-on deep learning, such as how to store and manipulate data, and how to apply Perceptron, vectors and matrices, Backpropagation and feedforward neural networks.
- Understand the concepts and techniques in artificial neural networks, including Modifications and extensions to a Feed-Forward and L1 and L2 Regularization
- Learn deep learning tool kit like Keras and PyTorch.
- Have hands-on experience with artificial neural networks, regularizations and hyperparameter tuning for deep learning algorithms.

UNIT I

Deep Learning fundamentals - The beginnings of Artificial Neural Networks - The XOR problem - From cognitive science to Deep Learning - Neural networks in the general AI landscape - Math for deep learning explained - Functions and derivatives - Vectors, matrixes, and tensors - Probability distributions - How neural networks work: General – overview.

UNIT II

Artificial neural network intuition – Perceptron - Representation of a neuron - Feedforward neural networks - Basic concepts and terminology for neural networks - Representing network components with vectors and matrices - Neural network topology – Backpropagation - A Complete Feedforward neural network - Activation functions

UNIT III

Loss and cost functions - Weight initialization and batch normalization - Gradient descent - Learning Rate, Momentum and Dropout - Stochastic Gradient Descent and Online Learning - Problems for multiple hidden layers: Vanishing and exploding gradients - ANN applications - Overfitting and underfitting and methods - to overcome them in deep neural networks - Modifications and extensions to a Feed- Forward neural network - L1 and L2 – Regularization - How to set up optimal hyper-parameters for deep models.

UNIT IV

Introduction to GPUs and google collab - Introduction to building - neural networks with Keras - Introduction to Keras - A simple deep neural network for classification - Introduction to the functional API in Keras - Regression with Keras - Keras callbacks - Building blocks of deep learning with PyTorch - Getting started with Deep Learning using – PyTorch.

UNIT V

CNN Intuition - How a CNN operates - ReLU layer – Pooling – Flattening - Full connection - Convolution variant - Building ANNs – ANN features (Practicals) - Regularizations (Practicals) - Hyperparameter tuning for Deep Learning algorithms (Practicals) - Keras & PyTorch(Practicals) - CNN (Practicals)

COURSE OUTCOMES:

- Understand deep learning fundamentals through cognitive science approach.
- Evaluate deep learning using how to store and manipulate data, and how to apply Perceptron, vectors and matrices, Back propagation and feed forward neural networks.

- Apply the concepts and techniques in artificial neural networks, including Modifications and extensions to a Feed-Forward and L1 and L2 Regularization
- Create predictions using deep learning tool kit like Keras and PyTorch.
- Create deep learning algorithms using artificial neural networks, regularizations and hyper parameter tuning.

REFERENCES:

1. Deep Learning with Python: Learn Best Practices of Deep Learning Models with PyTorch 2nd Edition, NikhilKetkar, Apress, 2021.
2. Deep Learning: Concepts and Applications for Beginners Guide to Building Intelligent Systems, Mark Howard,2018.
3. Deep Learning Fundamentals An Introduction for Beginners Chao Pan, AI Sciences LLC., 2018
4. Deep Learning with PyTorch A practical approach to building neural network models using PyTorch, Subramanian,Vishnu, Packt Publishing, 2018

BS4003 **NATURAL LANGUAGE PROCESSING** **L T P C**
3 0 0 3

COURSE OBJECTIVES:

- Understand the fundamental concepts of text mining and NLP
- Provide a framework to map NLP concepts with real-world applications
- Recognize the techniques of pre-processing and information retrieval
- Learn Text similarity and Text Classification
- Showcase advanced NLP applications and concepts associated with them

UNIT I

Introduction to text mining & NLP - Why should we use text for analysis? - Text mining vs NLP - Challenges in NLP - Syntaxes Semantics - Introduction to language models - NLP methods & workflow - Applications of NLP.

UNIT II

Data extraction – Why - pre-process text? - Steps in text pre-processing - Tokenization – Stop Words removal - Removing HTML tags, emojis, smileys etc., - Stemming & Lemmatization - Text vectorization and DTM - TFIDF and Topic modeling - Text visualization.

UNIT III

Introduction to Word embedding - Limitations of count vectorizers - Cosine Similarity -Cosine Similarity - Co-occurrence Matrix - Pre-trained word embeddings - Applications of word embeddings - Applications of word embeddings.

UNIT IV

Introduction to text classification - Text classification methodology - Features for text classification - Features for text classification - Sentiment analysis - Sentiment analysis - Intent detection - Intent detection.

UNIT V

POS tagging - Word sense disambiguation - Named entity recognition – Chatbots - Machine translation - Text summarization - Natural language generation - Natural language generation.

COURSE OUTCOMES:

- Illustrate text mining and Natural Language Processing
- Apply framework to map NLP concepts with real-world applications
- Apply the techniques of pre-processing and information retrieval
- Evaluate Text similarity and Text Classification
- Create advanced NLP applications

REFERENCES:

1. Transformers for Natural Language Processing: Build innovative deep neural network architectures for NLP with Python, PyTorch, TensorFlow, BERT, RoBERTa, Denis Rothman, Packt Publishing, 2021
2. Deep Learning in Natural Language Processing,Li Deng, Yang Liu, Springer. 2018
3. Hands On Natural Language Processing With Tensor flow:Concepts and Applications, Michael Walker, AI Sciences LLC,2018
4. Natural Language Processing with Python, Steven Bird, Ewan Klein, Edward Loper, O'Reilly Media, 2009

BS4004	DEEP LEARNING – II	L T P C 3 0 0 3

COURSE OBJECTIVES:

- Learn how neural network provides best solutions using Elman network, Long Short- Term Memory and Sequence-to-sequence Models
- Familiarize on Autoencoder and Boltzmann machine.
- Gain knowledge on generative adversarial neural networks and its applications
- Study the deep reinforcement learning through model-based and model-free methods.
- Learn about different trends in deep learning applications.

UNIT I

Recurrent Neural Networks (RNN) Intuition - Sequences of unequal length - The three settings of learning with RNN - Adding feedback loops - Unfolding a Neural Network - Elman Networks - Long Short-Term Memory (LSTM) - Sequence-to- Sequence models and Attention.

UNIT II

Autoencoders & Boltzman Machines – Introduction - Autoencoders –Structure and Training - Denoising Autoencoders - Learning representations - Different autoencoder architectures - Stacking autoencoders - Boltzmann machine - Energy-based models.

UNIT III

Generative Adversarial Neural Networks (GANN) - Introduction to GANNs - What are generative models - Challenges of GANNs - What are generative adversarial models - Problems with GANNs
- How do GANs work - Types of GANs and their applications.

UNIT IV

Deep Reinforcement Learning (DRL) - Introduction to RL - Features and Benefits of RL -Model-based RL - Model-free RL - Q-learning - Value methods -Deep Q networks.

UNIT V

Trends in Deep Learning Applications - Self-driving cars - Voice- activated assistants and Voice Search - Automatic machine translation - Automatic text generation – Automatic handwriting generation - Internet search - Image recognition - Automatic image caption generation -

Automatic colorization - Recommender systems -Predicting earthquakes - Neural networks for brain cancer detection - Neural networks in finances – IOT -RNN – Autoencoders & Boltzmann machines (Practicals) - GANs – Deep reinforcement learning (Practicals).

COURSE OUTCOMES:

1. Summarize how the deep learning settings work using recurrent neural networks.
2. Apply auto encoder to compress raw data and able to take stochastic decisions about whether to be ON or OFF using Boltzmann machine
3. Create adversarial neural networks for accurate predictions.
4. Evaluate intelligent agents ought to take actions in an
5. environment through Reinforcement Learning.
6. Apply neural networks techniques in different fields.

REFERENCES:

1. Deep Learning with Python, Manning, François Chollet, Second Edition 2nd Edition 2021
2. Advanced Deep Learning with Python: Design and implement advanced next-generation AI solutions using Tensor Flow and PyTorch, Ivan Vasilev, Packt Publishing 2019.
3. Advanced Deep Learning with Keras: Apply deep learning techniques, autoencoders, GANs, variational autoencoders, deepreinforcement learning, policy gradients, and more, Rowel Atienza, Packt Publishing 2018.

BS4005	BUSINESS INTELLIGENCE	L T P C 3 0 0 3

COURSE OBJECTIVES:

- Understand the fundamentals of Business Intelligence
- Learn data modeling and how to design a data warehouse
- Learn the techniques of data- preprocessing mining and post processing
- Understand various methods techniques and algorithms in Business Intelligence
- Learn the recent trends in Data warehouse and Business Intelligence

UNIT I

Introduction To Business Intelligence - Introduction to Data - classification of Data - Classification of information - Classification of knowledge - Classification of Data Warehouse - Role of Data Warehouse in Business Intelligence - Role of Data Warehouse in Business Intelligence - Introduction to Business Intelligence - The Four-Step Process of Business Intelligence – Business Applications of BI – The core Benefits of BI - Ethics in BusinessIntelligence
- Case Study.

UNIT II

Introduction to Modelling techniques - Modelling techniques - Introduction to Data warehouse- Data warehouse - Dimensional Modelling - Star Schema - Snow flake Schema - Fact constellation Schema – Facts – Additive - Semi-additive - Non-additive - Hierarchy in dimensions - Parent child relationships - Many- Many dimensional relationship - Dimensional Modelling - Case Study.

UNIT III

Pre-Processing Of Data - Data discovery - Data preparation - Data cleaning - Data integration - Data reduction - Data transformation – ETL - ETL architecture - Extraction concept - Concept of Transformation - Initial loading - Incremental loading - Late Arriving Facts -Data Marts -Cubes - Case Study.

UNIT IV

Reporting And Analytics - Reporting: Metadata - Layers of Metadata - Presentation Layer - Data Layer - Use of different Layers & overall reporting architecture - Report elements -Charts – Tables – OLAP – MOLAP – Dashboards - Ad-hoc reports. - Analytics: Exploratory Techniques - Analytics: Statistical Techniques - Cluster Analysis - Predictive Analysis – Regression - Time Series - Case Study.

UNIT V

Recent Trends - Data Analytics - BI and Social Media - Leveraging Social Media - Web Scraping Tools - Direct Interaction with Customers - Dash boarding the Data - Real time BI - CaseStudy - Operational BI+ - Case Study - Embedded BI - Case Study - BI on Cloud - Case Study.

COURSE OUTCOMES:

1. Appraise knowledge on Business Intelligence
2. Design a data warehouse and Analyze the various data modeling
3. Design the techniques of data pre-processing mining and post processing
4. Evaluate and control the methods techniques and algorithms in Business Intelligence
5. Discover the strategic change and address the strategic CSR issues in an effective manner

REFERENCES:

1. Business Intelligence: An Essential Beginner's Guide to BI Big Data Artificial Intelligence Cyber Security Machine Learning Data Science Data Analytics Social Media and Internet Marketing Richard Hurley IBM 2020.
2. Business Intelligence and Analytics Ramesh Sharda Dursun Delen Efraim Turban 10thEdition Pearson 2018.
3. 3. Decision Support andBusiness Intelligence System Efraim Turban Ramesh Sharda Dursun Delen Pearson 2013.

BS4006 **RESEARCH METHODS IN BUSINESS** **L T P C**
3 0 0 3

COURSE OBJECTIVES:

- Explore basic knowledge about Research methods
- Gain knowledge on qualitative research methods
- Examine about Quantitative methods
- Understand the method of performing data analysis
- Design the research proposal and report writing

UNIT I

Background to Re- search - Research paradigms - Contributions of research - Basic concepts of Research - Theory and practice - Theory Vs Model - Research Ethics - Literature Review - Identifying and assessing Literatures - Process involved in collecting Literature Reviews - Scholarly literature - Academic writing – Referencing - Steps in literature review - Literature review development - Finding Research Gap - Meta analytics - Need and Importance.

UNIT II

Qualitative Methods - The nature of Quantitative methods - Types of qualitative research - Data collection - Types of Data - Primary Data and its types - Secondary Data - Sources of Secondary Data - Syndicated Data - Data analysis - Data analysis methods – Assignment - Writing up qualitative research- Steps involved in qualitative research - Research instruments used for Qualitative methods - Research procedures involved - Case Study - Class participation.

UNIT III

Quantitative Methods - Data and Variables - The Nature of Quantitative Research -Descriptive Statistics - Inferential Statistics – Discussion – Sampling – Seminar – Designing – Coding - Survey method and its types – Questionnaires - Types of Questionnaires - Pattern involved in designing Questionnaire - Scheduler method - Observation method - Data Entry – Screening.

UNIT IV

Hypothesis Testing - Introduction to Univariate and Bivariate analysis - Introduction to Multivariate analysis - Association Test - Correlation coefficient – Regression - Chi–square Tests Parametric and Non Parametric tests - t–tests – ANOVA - Z test – Reliability – Validity - Rigor– Reporting - Quantitative Study – Tabulation - Results Presentation - Class presentation.

UNIT V

Research purpose - Framing Research Objectives - Nature of the study - Need of the study – Evaluation - Content and format - Practical considerations – Timelines – Budgets - Class Discussion - Supervision management - Structure of report writing – Bibliography – Referencing - Pattern of Presenting - Differences between Bibliography and Referencing – Defense of proposals Research Reports.

COURSE OUTCOMES:

1. Remember basics of Research methods
2. Understand the management concepts derived from qualitative research methods
3. Analyze the various phases of Quantitative methods

4. Evaluate the logic and methods involved in data analysis
5. Create the research proposal and report writing

REFERENCES:

1. Research Methods in Business Studies, Pervez Ghauri, Kjell Grønhaug, Roger Strange, Cambridge University Press, 2020
2. Malhotra, Dash “Marketing Research: An applied orien-tation” 7th d. Pearson Ltd, 2015.
3. Brown Suter Churchill, Marketing Research, 8th edition,Cengage Learning India Pvt ltd,2015
4. G.C. Beri, 'Marketing Research', 4th edition, TataMcGraw–Hill Education.2007
5. Churchill, Lacobucci & Israel, Marketing Research–A South Asian Per-spective' Cengage Learning, India edition, 2010.
6. Harper, W. Boyd Jr, Ralph Westfall, Stanley F. Stasch, Richard D. IrwinInc.,'Marketing Research – text and cases', All India Traveler Book Seller 12th edition ,2014
7. Raymond Kent, Marketing Research – Measurement, Method and applica-tion', International Thomson Business Press edition 2, 2011
8. William G. Zikmund, Barry J. Babin, 'Essentials of Marketing Research, International Edition, 5e, Cengage Learning ,2015
9. William G. Zikmund, Barry J. Babin, Jon C. Carr, Mitch Griffin, 'BusinessResearch Methods, International Edition, 9e, Cengage Learning, 2014.

BS4007 FINANCIAL REPORTING STATEMENTS AND ANALYSIS L T P C
3 0 0 3

COURSE OBJECTIVES:

- It is imperative that management graduates who are aspiring to become business leaders in the future, have a good grasp of the tools and techniques of basic accounting like Journal. Ledger, and Final Accounts and to interpret them.

- A basic understanding of the financial statements is common to all functional areas of Management. A Manager needs to compare the various financial statements and to make a trend of financial data.

- Ratio analysis is a useful management tool that will improve your understanding of financial results and trends over time, and provide key indicators of organizational performance. Also, The cash flow report is important because it informs the reader of the business cash position. This course is designed in such a manner the students understands Ratio Analysis and Cash Flow Analysis.

- Budget is the base for all business decision and success. Hence a Management student should know various types of budgets and its uses. This course is designed to include the fundamentals of financial management such as budgeting.

- Annual reports provide information on the company's mission and history and summarize the company's financial and other achievements in the past year. This course is designed to impart knowledge on analysis and interpretation of annual reports and to understand the position of the company.

UNIT I

Basic Introduction to Financial Accounting - Accounting Principles - Accounting Concepts - Conventions in Accounting - Journal Entry – Basic Entries - Ledger Posting - Ledger Posting - Preparation of Trail Balance - Preparation of Trading Account - Adjustments in Trading Account- Preparation of P&L Account - Adjustment in P&L Account - Preparation of Balance Sheets - Preparation of Balance Sheets - Case Study.

UNIT II

Introduction to Financial Statements - Comparative Income Statements - Preparation of Comparative Income Statements - Comparative Balance Sheets - Preparation of Comparative Balance Sheets - Common Size Income Statements - Preparation of Common Size Income Statements - Common Size Balance Sheet - Preparation of Common Size Balance Sheet - Interpretation from the Common size statements - Interpretation from the Comparative statements Trend Analysis - Case Study.

UNIT III

Introduction to Ratio Analysis - Advantages of Ratios - Types of Ratios - Liquidity Ratios - Solvency Ratios - Solvency Ratios - Profitability Ratios Preparation of Balance Sheet from Ratio Analysis - Preparation of Ratios from Balance Sheets - Cash Flow Statement – Introduction - Preparation of Cash Flow Statements - Case Study.

UNIT IV

Introduction to Budget - Meaning and Significance - Importance of Budget in Managerial Decision Making - Types of Budget - Preparation of Functional Budget - Preparation of Flexible Budget -

Other Budget types preparation - Zero Based Budgeting - Case Study.

UNIT V

Annual Report – Introduction - Items in Annual Report - Key Points in Annual Report - Segment Reporting – Introduction - Different Segments in Annual Report - Notes in Financial Statement - How to interpret notes in Financial Statements? - Disclosures in Financial Statements - Comparative Statements - Analysis of Management Discussion -Récent Trends in Accounting.

COURSE OUTCOMES:

1. Infer the basic tools and techniques of financial accounting and to study the final accounts
2. Evaluate the financial statements and learn how to compare and interpret the same.
3. Remember knowledge on ratio analysis and cash flow analysis which helps in decision making process
4. Analyze the importance of budget analysis in the business decision making process.
5. Create annual Reports and understand the ways of interpreting the annual reports

REFERENCES:

1. Larry M. Walther , Financial Accounting , IndependentlyPublished, 2020.
2. Maire Loughran, Financial Accounting For Dummies, 2nd Edition,2020.
3. K. R. Subramanyam, Financial Statement Analysis , 11thEdition , McGraw Hill , 2020.
4. N.P.Srinivasan & M.SakthivelMurugan, "Accounting for Management" 2nd Edition, 2010, S.Chand& Company Ltd.,New Delhi.
5. S.P.Jain, K.L.Narang, "Financial Accounting analysis", 3rd revised Edition, 2004, Kalyani publisher, New Delhi.
6. T.S.Grewal, S.C.Gupta, "Introduction to Accountancy", 8th revised Edition, 2008, S.Chand& company Ltd.,New Delhi.
7. R.K.Sharma, SashiK.Gupta, "Management Accounting, Principles and Practice", 7th revised Edition, 2008, Kalyani Publishers, New Delhi.
8. M.Y.Khan, P.K.Jain, "Management Accounting Text, problems and cases, 5th Edition,2010, Tata Mcgraw Hillpublishing company ltd., New Delhi.
9. Equity research reports published by Citi group, Barkley's and HSBC on fundamental analysis; Also book titled "Balance sheet reading" by Dun and Brad street and YouTube videos on how to read a Balance Sheet.

BS4008 **BIG DATA MANAGEMENTAND SECURITY** **L T P C**
3 0 0 3

COURSE OBJECTIVES:

- Understand the concept of Big Data and High performance Analytics Learn to apply Social Media a Source of Big Data
- Explain the cyber-attack and the tools to mitigate them
- Learn the implementation strategies of Big data
- Understand the Autonomous Artificial Intelligence System and the stages of Data processing

UNIT I

Introduction To Big Data - Concept of Big Data - The Five V's of Big Data - Big Data in the Big World - Streaming Analytics - An Overview of Big Data Solutions - Drilling into the Big Data Gold Mine - Data Fusion - High Performance Analytics for Intelligence Professionals - Introduction-The Age of Big Data and - High-Performance Analytics – Technology Challenges.

UNIT II

Core Concepts and Application Scenarios - Introduction, Changing Threat Landscape - Embracing Big Data - Big Data and Law Enforcement - Advances & Implications - Lessons from an Active Shooter Case Study - The Intersection of Big Data and Law Enforcement - Case Example and Workshop Overview - Situational Awareness & Twitter as a Social Media Source of Big Data - Big Data Lens & The Advancement of Big Data Analytics After 2001 - Critical Infrastructure Protection by Harnessing Big Data - Overarching Architecture.

UNIT III

Military and Big Data Revolution - Risk of Collapse - Introduction to the Big Data Arena & Simple to Complex Use Cases - Canonic Real Use Cases - Time Big Data Systems - Implementing the Real-Time Big Data System. - Deep Data Analytics Tools - Cybercrime & Attack Motivations - Implications for Big Data and National Security - Defining Cybercrime &Cyber terrorism - Attack Classification and Parameters & Tools Usedto Facilitate Attacks - Case study.

UNIT IV

Methods And Technological Solutions – Requirements and Challenges for Big Data Architecture – Challenges Involved Big Data Processing - Tools and Technologies for the Implementation of Big Data - Data Sources and Analytics - Mining Social Media – Architecture – Tools – Approaches to Detecting Criminal Activity - Text Mining - Case study.

UNIT V

Literature Mining And Ontology Mapping Applied To Big Data - Adaptive Robust Integrative Analysis for Finding Novel Associations – Conceptual Framework of ARIANA – Big Data Concerns in Autonomous AI Systems – Artificially Intelligent System Memory Management - Constructivist Learning - Practical Solutions for Secure Knowledge Development in Big Data Environments - An ABC Approach to Big Data and Security - Humans Dealing with Big Data The Three Stages of Data Processing Explained - The Public Order Policing – Model and the Common Operational Picture.

COURSE OUTCOMES:

1. Understand the concepts of Big Data and High performance Analytics
2. Apply Social Media data as a Source of Big Data

3. Analyze cyber-attack and the tools to mitigate them
4. Evaluate strategies of Big data
5. Assess the Autonomous Artificial Intelligence System and the stages of Data processing

REFERENCES:

1. Choo, Kim-Kwang Raymond, Dehghantanha, Ali (Eds.), Handbook of Big Data Privacy, Springer International Publishing,2020,1st Edition.
2. 2.Fadlullah, Zubair, Khan Pathan, Al-Sakib (Eds.), Combating Security Challenges in the Age of Big Data, Springer InternationalPublishing,2020,1st Edition.
3. 3.Hu, Shiyan, Yu, Bei (Eds.), Big Data Analytics for Cyber-Physical Systems,Springer International Publishing,2020,1st Edition
4. 4.Babak Akhgar Gregory B. Saathoff Hamid Arabnia Richard Hill Andrew Staniforth Petra Bayerl, Application of Big Data for National Security, Butterworth-Heinemann-2015, 1st Edition.

BS4009 ANALYTICS TOOLKIT FOR DECISION SCIENCES L T P C
3 0 0 3

COURSE OBJECTIVES:

- Learn R and Python programming skills for data science
- Explore Data using python for data visualization
- Apply Python programming to solve data science problems
- Manipulate data using Python libraries
- Explore Data Using R

UNIT I

Need for Toolkit - Components of toolkit - R and uses - R Libraries - Downloading andinstall of R - Data types.

UNIT II

Data exploration - Elements of Data - Data importing - Data munging - Data transforming -R - Descriptive Statistics.

UNIT III

Introduction to Python - Advantages of Python - Data importing Python libraries - Data transforming in Python - Descriptive Statistics - Functions of Numpy - Data Needs - Data Wrangling - Data frame elements - Data slicing, Testing.

UNIT IV

Functions of Numpy - Data Needs - Data Wrangling - Data frame elements - Data slicing, Testing.

UNIT V

Visualization - Multivariate analysis – Matplotlib- Ggplot - Seaborn library - EDA using graphics.

COURSE OUTCOMES:

1. Apply R for Data exploration
2. Understand Python Package for Data understanding
3. Apply R libraries for Data visualization
4. Apply Python packages for creating charts
5. Create and check the Data models

REFERENCES:

1. Analytics, Data Science, & Artificial Intelligence: Systems for Decision Support, , Ramesh Sharda, Dursun Delen, Efraim Turban, GlobalEdition, Pearson 2020.
2. Data Analytics using Python, Bharti Motwani, Wiley, 2020.
3. Data Analytics Using R, Seema Acharya, McGraw Hill Education, 2018.
4. R for Everyone, Jared P. Lander, Pearson Education; 2nd edition, 2018.
5. R for data science, Hadley Wickham, O′Reilly; 1st edition, 2017

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BS4010 **DIGITAL MARKETING** **L T P C**
3 0 0 3

COURSE OBJECTIVES:

- The primary objective of this module is to examine and explore the role and importance of digital marketing in today's rapidly changing business environment.
- It also focusses on how digital marketing can be utilised by organisations and how its effectiveness can measured.

UNIT I

Online Market space- Digital Marketing Strategy- Components -Opportunities for building Brand- Website - Planning and Creation- Content Marketing.

UNIT II

Search Engine optimisation - Keyword Strategy- SEO Strategy - SEO success factors -On-Page Techniques - Off-Page Techniques. Search Engine Marketing- How Search Engine works- SEM components- PPC advertising -Display Advertisement

UNIT III

E- Mail Marketing - Types of E- Mail Marketing - Email Automation - Lead Generation - Integrating Email with Social Media and Mobile- Measuring and maximising email campaign effectiveness. Mobile Marketing- Mobile Inventory/channels- Location based; Context based; Coupons and offers, Mobile Apps, Mobile Commerce, SMS Campaigns-Profiling and targeting.

UNIT IV

Social Media Marketing - Social Media Channels- Leveraging Social media for brand conversations and buzz. Successful /benchmark Social media campaigns. Engagement Marketing- Building Customer relationships - Creating Loyalty drivers - Influencer Marketing.

UNIT V

Digital Transformation & Channel Attribution- Analytics- Ad-words, Email, Mobile, Social Media, Web Analytics - Changing your strategy based on analysis- Recent trends in Digital marketing.

COURSE OUTCOMES:

1. To examine and explore the role and importance of digital marketing in today's rapidly changing business environment.
2. To focusses on how digital marketing can be utilised by organisations and how its effectiveness can measured.
3. To know the key elements of a digital marketing strategy
4. To study how the effectiveness of a digital marketing campaign can be measured
5. To demonstrate advanced practical skills in common digital marketing tools such as SEO, SEM, Social media and Blogs.

REFERENCES:

1. Fundamentals of Digital Marketing by Puneet Singh Bhatia;Publisher: Pearson Education; First edition (July 2017);ISBN-10: 933258737X;ISBN-13: 978-9332587373.
2. Digital Marketing by Vandana Ahuja ;Publisher: Oxford University Press (April 2015)
3. ISBN-10: 0199455449;ISBN-13: 978-0199455447
4. Marketing 4.0: Moving from Traditional to Digital by Philip Kotler;Publisher: Wiley; 1st edition (April 2017); ISBN10: 9788126566938;ISBN13: 9788126566938;ASIN: 8126566930
5. Ryan, D. (2014). Understanding Digital Marketing: Marketing Strategies for Engaging the Digital Generation, Kogan Page Limited.
6. Pulizzi,J Beginner's Guide to Digital Marketing , Mcgraw Hill Education.

7. Barker, Barker, Bormann and Neher(2017), Social Media Marketing: A Strategic Approach, 2E South-Western ,Cengage Learning.

BS4011 ARTIFICIAL INTELLIGENCE AND ITS APPLICATIONS L T P C
3 0 0 3

COURSE OBJECTIVE

- To learn about Artificial Intelligence
- To familiarize the students to know the search technique
- To acquaint the students with the fundamentals of probabilistic reasoning

UNIT I INTRODUCTION TO AI 9

Overview of AI - Problems of AI - AI technique - Tic-Tac-Toe problem - Intelligent Agents – Agents – Environment - Nature of Environment - Nature of Environment - Structure of Agents - Goal Based Agents - Utility Based Agents - Learning Agents - Problem Solving – Problems - Problem Space & search - Defining the problem - as state space search - Production System - Problem Characteristics - Issues in the design of
- search programs

UNIT II INTRODUCTION TO SEARCH TECHNIQUES 9

Problem solving agents - Searching for solutions - Uniform search strategies - Breadth first search - Depth first search - Depth limited search - Bidirectional search Comparing uniform search strategies - Heuristic search strategies Greedy best-first search - A* search - AO* search - Memory bounded heuristic search - Local search algorithms - Optimization problems - Hill climbing search - Simulated annealing search - Local beam search

UNIT III INTRODUCTION TO CONSTRAINT SATISFACTION PROBLEMS 9

Local search for constraint satisfaction problems - Local search for constraint satisfaction problems - Adversarial search - Games -Games -Optimal decisions - Strategies in games - The minimax search procedure - Alpha-beta pruning - Additional refinements - Iterative deepening

UNIT IV INTRODUCTION TO KNOWLEDGE & REASONING 9

Knowledge representation issues- Representation & mapping- Approaches to knowledge representation- Using predicate logic- Representing simple fact in logic- Representing instant- ISA relationship- Computable functions & predicates- Resolution-Natural deduction- Representing knowledge using rules- Procedural verses declarative knowledge- Logic programming-Forward verses backward reasoning-Matching-Control knowledge

UNIT V INTRODUCTION TO PROBABILISTIC REASONING 9

Representing knowledge in an uncertain domain -The semantics of Bayesian networks -Planning Overview -Components of a planning system -Goal stack planning -Hierarchical planning -Other planning techniques - Expert Systems -Representing and using domain knowledge -Expert system shells - knowledge acquisition

TOTAL: 45 PERIODS

COURSE OUTCOMES

- In-depth knowledge of various functions of AI technique
- Develop the skillset to have Problem solving agents
- Insights about the current trends in the semantics of Bayesian networks

REFERENCES:

1. Stuart Russell and Peter Norvig, Artificial Intelligence: A Modern Approach, Pearson, 3rd
2. Edition, 2020
3. Ethem Mining, Artificial Intelligence for Business Applications: Use Artificial Intelligence fo Scaling Up Your Business Using AI Marketing, Everooks Ltd, 2020
4. Ela Kumar, Artificial Intelligence, , Dreamtech Press, 2020
5. Ritch & Knight, Artificial Intelligence, Tata McGrawHill, 3rd Edition, 2019
6. Patterson, Introduction to Artificial Intelligence & Expert Systems, PHI, 2015

BS4012 NATURAL LANGUAGE PROCESSING WITH LLM L T P C
3 0 0 3

COURSE OBJECTIVE

- To understand the importance of Various stages of NLP
- To know about the recent information of Language modelling

UNIT I INTRODUCTION TO NLP 9

Various stages of NLP –The Ambiguity of Language: Why NLP Is Difficult Parts of Speech: Nouns and Pronouns, Words: Determiners and adjectives, verbs, Phrase Structure. Statistics Essential Information Theory : Entropy, perplexity, The relation to language, Cross entropy.

UNIT II TEXT PREPROCESSING AND MORPHOLOGY 9

Character Encoding, Word Segmentation, Sentence Segmentation, Introduction to Corpora, Corpora Analysis. Inflectional and Derivation Morphology, Morphological analysis and generation using Finite State Automata and Finite State transducer.

UNIT III LANGUAGE MODELLING 9

Words: Collocations- Frequency-Mean and Variance –Hypothesis testing: The t test, Hypothesis testing of differences, Pearson's chi-square test, Likelihood ratios. Statistical Inference: n -gram Models over Sparse Data: Bins: Forming Equivalence Classes- N gram model - Statistical Estimators- Combining Estimators

UNIT IV SYNTAX AND SEMANTICS 9

Shallow Parsing and Chunking, Shallow Parsing with Conditional Random Fields (CRF), Lexical Semantics, WordNet, Thematic Roles, Semantic Role Labelling with CRFs. Statistical Alignment and Machine Translation, Text alignment, Word alignment, Information extraction, Text mining, Information Retrieval, NL interfaces, Sentimental Analysis, Question Answering Systems, Social network analysis.

UNIT V LARGE LANGUAGE MODEL 9

word embeddings, seq2seq, transformers. Discriminative modeling: classification and detection (Mask R- CNN, DETR), segmentation (UNets), motion (RAFT, PIP), depth estimation. Self-supervised learning, contrastive learning, SimCLR. Generative models (GANs, VAEs, AR, Diffusions). Alignment (RL, ChatGPT). Unified language and vision models (CLIP, BLIP), latent diffusion models (DALLE), Flamingo.

TOTAL: 45 PERIODS

COURSE OUTCOMES

- Learn the basics of NLP
- Understand the system development methodologies
- Gains knowledge on effective applications of large Language modeling

TEXT BOOKS

1. Christopher D. Manning and Hinrich Schutze, " Foundations of Natural Language Processing" , 6th Edition, The MIT Press Cambridge, Massachusetts London, England, 2003
2. Daniel Jurafsky and James H. Martin "Speech and Language Processing", 3rd edition, Prentice Hall, 2009.

REFERENCE BOOKS

1. NitinIndurkhya, Fred J. Damerau "Handbook of Natural Language Processing", Second Edition, CRC Press, 2010.
2. James Allen "Natural Language Understanding", Pearson Publication 8th Edition. 2012.
3. Chris Manning and HinrichSchütze, "Foundations of Statistical Natural Language Processing",2nd edition,
4. MITPress Cambridge, MA, 2003.
5. Hobson lane, Cole Howard, Hannes Hapke, "Natural language processing in action" MANNING Publications, 2019.

BS4013 **DATA VISUALIZATION** **L T P C**
3 0 0 3

COURSE OBJECTIVE

Understand the operational functions of data visualization tool
To provide knowledge about Data visualization

UNIT I DATA VISUALIZATION TOOLS 9

Data storytelling – Visual analytics and 7 step process - Tableau basics – Navigating tableau - Design principles - Time Series, Aggregation and Filters - Maps and scatterplots - Creating first dashboard -Joining and blending data - Advance dashboards - Advance data preparation - Clusters - Custom territories and design filters

UNIT II NAVIGATING TABLEAU 9

Connecting tableau to a data file - Creating calculated fields - Adding colours, labels and Formatting - Exporting worksheet - Design principles- Design principles for Marketing domain- Design principles for Finance domain- Design principles for HR domain- Selecting the appropriate charts based on the data.

UNIT III DATA EXTRACTS 9

- String, Date & Logical calculations - Parameters in Tableau -Working with Time Series- Working with time series for functional domain-Creating area chart and Highlighting- Adding filters-What-If-Analysis with parameters-Special charts. Charts for a specific application

UNIT IV JOINING DATA IN VISUALIZATION 9

Working with Hierarchies- Creating a scatter plot-Creating dashboard-Adding an interactive action- Highlighting-Dashboards actions-Joins - Joining vs Blending data-Data blending, Dual-axis chart.

UNIT V MAPPING 9

setting geographical roles - Creating Tableau calculations for gender - Creating bins and distributions for age- Leveraging power of Parameters-Creating a Tree map chart-Creating a Tree map for a specific application-Dashboard Interactivity-Advanced dashboard interactivity-Clustering in Tableau.

TOTAL: 45 PERIODS

COURSE OUTCOME

- Students would have gained knowledge on Visual analytics
- Students will gain knowledge needed for Tableau basics
- Students would be aware of the Parameters in Tableau

REFERENCES:

1. Better Data Visualizations – A Guide for Scholars, Researchers, and Wonks, Jonathan Schwabish, Columbia University Press, 2021.
2. The Power of Data Storytelling, Sejal Vora, 1st Edition, Sage Publication India Pvt. Ltd., 2019
3. Getting Started with Tableau, Tristan Guillevin, 2nd Edition, Packt Publishing, 2019
4. The Big Book of Dashboards, Steve Wexler, Jeffrey Shaffer, and Andy Cotgreave, Wiley, 2017

BS4014 **DATA BASE MANAGEMENT SYSTEM** **L T P C**
3 0 0 3

COURSE OBJECTIVE:

- To understand about database transaction
- Analyze the Database Design.

UNIT I INTRODUCTION TO DATABASES AND TRANSACTIONS **9**

Introduction to Databases and Transactions-What is database system, purpose of database system, view of data, relational databases, database architecture, transaction management Data Models-The importance of data models, Basic building blocks, Business rules, The evolution of data models, Degrees of data abstraction.

UNIT II DATABASE DESIGN **9**

ER-Diagram and Unified Modeling Language, Database design and ER Model: overview, ER-Model, Constraints, ER-Diagrams, ERD Issues, weak entity sets, Codd's rules, Relational Schemas, Introduction to UML Relational database model: Logical view of data, keys, integrity rules. Relational Database design: features of good relational database design, atomic domain and Normalization (1NF, 2NF, 3NF, BCNF).

UNIT III RELATIONAL ALGEBRA AND CALCULUS **9**

Relational algebra: introduction, Selection and projection, set operations, renaming, Joins, Division, syntax, semantics. Operators, grouping and ungrouping, relational comparison. Calculus: Tuple relational calculus, Domain relational Calculus, calculus vs algebra, computational capabilities.

UNIT IV CONSTRAINTS **9**

Views and SQL -What is constraints, types of constrains, Integrity constraints, Views:Introduction to views, data independence, security, updates on views, comparison between tables and views, SQL: data definition, aggregate function, Null Values, nested sub queries, Joined relations. Triggers.

UNIT V TRANSACTION MANAGEMENT AND CONCURRENCY CONTROL **9**

Transaction management: ACID properties, serializability and concurrency control, Lock based concurrency control (2PL, Deadlocks), Time stamping methods , optimistic methods, database recovery management.

TOTAL : 45 PERIODS

COURSE OUTCOMES:

- Determine the Relational algebra
- Evaluate the Transaction management and concurrency control

REFERENCES:

1. A Silberschatz, H Korth, S Sudarshan, "Database System and Concepts", fifth Edition McGraw-Hill , Rob, Coronel, "Database Systems", Seventh Edition, Cengage Learning.