MCKV INSTITUTE OF ENGINEERING

NAAC Accredited "A" Grade Autonomous Institute under UGC Act 1956
Approved by AICTE & affiliated to Maulana Abul Kalam Azad University of Technology, West Bengal
243 G.T. Road (N), Liluah, Howrah- 711204, West Bengal, India

MBA FOURTH SEMESTER SYLLABUS

COMPULSARY PAPER

Course Name:	**Entrepreneurship Development**		
Course Code:	MBA 401	**Category:**	Management Science Course
Semester:	Fourth	**Credit:**	2
L-T-P:	2-0-0	**Pre-Requisites:**	Basic understanding of organisation and business process
Full Marks:	100		
Examination Scheme:	Semester Examination:70	Continuous Assessment:25	Attendance:05

Course Objectives:	
1.	To develop and strengthen entrepreneurial quality and motivation in students.
2.	To impart basic entrepreneurial skills and understandings to run a business efficiently and effectively

Course Contents:

Module No.	Description of Topic	Contact Hrs.
1.	**Entrepreneurial Competence & Environment:** Entrepreneurship concept –Meaning, Evolution, Factors influencing Entrepreneurship, Entrepreneurship as a Career – Entrepreneurial Personality - Characteristics of Successful, Entrepreneur – Knowledge and Skills of Entrepreneur Business Environment - Role of Family and Society - Entrepreneurship Development Training and Other Support Organizational Services - Central and State Government Industrial Policies and Regulations – Barriers to Entrepreneurship	6
2.	**Business Plan Preparation:** Business Model Canvas. Steps in setting up a business; Creativity and entrepreneurship; Steps in Creativity ; Innovation and inventions 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, Ideation & Validation, Business Plan preparation; Compliance & Business Plan Communication.	4
3.	**Funding and Scaling Up of Business:** Finance and Human Resource Mobilization Operations Planning – Why is it necessary to scale up; Market and Channel Selection -Growth Strategies - Product Launching – Incubation, Angel Investor & Venture capital, IT startups. Validation Feasibility, ESOP, Field of start ups	6
4.	**Management of Small Business:** Monitoring and Evaluation of Business - Preventing Sickness and Rehabilitation of Business Units- Effective Management of small Business	4
Total		**20L**

Course Outcomes:	
After completion of the course, students will be able to:	
1.	Gain knowledge and skills needed to run a business
2.	Write business plan on their own.
3.	Understand the government policies and regulations
4.	Understand the operations of incubation centres and start-ups.

Learning Resources:	
1.	Hisrich, *Entrepreneurship*
2.	S.S. Khanka, *Entrepreneurial Development*
3.	Mathew Manimala, *Entrepreneurship Theory at the Crossroads*
4.	Prasanna Chandra, *Projects – Planning, Analysis, Selection, Implementation and Reviews*
5.	Arya Kumar, *Entrepreneurship*

Corresponding NPTEL/SWAYAM Courses:			
Sl. No.	**Course Name**	**Instructor Name**	**Host Institute**
1	Entrepreneurship	Prof. C Bhaktavatsala Rao	IIT Madras
	Course Link: https://onlinecourses.nptel.ac.in/noc21_mg70		
2	Entrepreneurship Development	Dr. Nilam Panchal	B.K. School of Business Management, Gujarat
	Course Link: https://onlinecourses.swayam2.ac.in/e-learning/preview/cec20_mg19		

FINANCIAL MANAGEMENT (MAJOR)

Course Name:	**Financial Derivatives and Risk Management**		
Course Code:	MBA-FM 402	**Category:**	Management Science Course
Semester:	Fourth	**Credit:**	4
L-T-P:	4-0-0	**Pre-Requisites:**	The basic concept of Managerial Finance
Full Marks:	100		
Examination Scheme:	Semester Examination:70	Continuous Assessment:25	Attendance:05

Course Objectives:	
1.	Identify different contracts in the derivative market.
2.	Illustrate different types of margins.
3.	Apply different concepts of option strategies.

Course Contents:		
Module No.	**Description of Topic**	**Contact Hrs.**

1.	**Introduction to Forward Contract:** Forward contracts, Limitations of forward markets, pay-offs, Forward Rate Agreement (FRA), and Forward Foreign Exchange Contract –Cost of Carry Model	8
2	**Introduction to Futures:** Introduction to futures, Stock Futures, Index futures, Commodity Futures, and Currency Futures - Distinction between futures and forwards contracts.	8
3.	**Concept of Margin**: Types of Margins in Futures – ITM, ATM, OTM - Concept of Lot Size - Open Interest- Hedging through Forward and Futures – Contango and Backwardation – Basis Risk.	6
4.	**Credit Derivatives:** Types of Credit Derivatives -Credit Default Swaps -Collateralized Debt Obligations (CDO) - The Indian Scenario, Credit Risk Mitigation, Weather and Energy Derivatives.	6
5.	**Option:** Call and Put Option- American and European Option- Put Call Parity. - Different Option Strategies: Bully, Bearish, Neutral Non-Directional Strategy, Option Strategy – Profit & Loss Chart. - Option Valuation: Pricing and Valuation of Option Contract- Binomial Option-Pricing Model - Black Scholes Model – their interpretations. - Options Greeks: Theta, Vega, Gamma, Delta	8
6.	**Swaps:** Types of Swaps, Swap Valuation, and Other Derivatives.	4
Total		**40L**

Course Outcomes:	
After completion of the course, students will be able to:	
1.	To have a brief concept of Risk Management using Forward and Futures.
2.	To familiarise the Risk Management Measurement using Options and Swaps.

Learning Resources:	
1.	Options, Futures and other Derivatives, John C. Hull, Pearson Education
2.	Derivatives, Dubofsky and Miller, Oxford University Press
3.	Financial Derivatives, Gupta, S.L., Prentice Hall.
4.	Financial Derivatives and Risk Management, O.P. Agarwal, Himalaya Publishing

Corresponding NPTEL/SWAYAM Courses:

Sl. No.	Course Name	Instructor Name	Host Institute
1	Financial Derivatives & Risk Management	Prof. J. P. Singh	IIT Roorkee
	Course Link: https://onlinecourses.nptel.ac.in/noc24_mg19		
2	Banking and Financial Markets	P C Narayan	Indian Institute of Management Bangalore
	Course Link: https://onlinecourses.swayam2.ac.in/e-learning/preview/imb20_mg40		

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Course Name:	**Managing Financial Institutions, Market and Banking Services**		
Course Code:	MBA-FM 403	**Category:**	Management Science Course
Semester:	Fourth	**Credit:**	4
L-T-P:	4-0-0	**Pre-Requisites:**	Basic concept of Managerial Finance
Full Marks:	100		
Examination Scheme:	Semester Examination:70	Continuous Assessment:25	Attendance:05

Course Objectives:	
1.	To provide an overview of components financial system in details.
2.	To explain classification of institutions, markets and services in the financial system.
3.	To impart knowledge on interrelationship and functioning of each components of financial market.

Course Contents:

Module No.	Description of Topic	Contact Hrs.
1.	**Functions and Competitions of banking industry:** Types of banks, comparatives features of different banks, banking business models, factors, necessitating banker's role in the economy, intermediation functions of bank, credit creation. Competition in commercial & investment banks, changes in bank's operation, managing competition among banks.	6
2.	**Failures of banks and Need for Regulations:** Risk associated in banking business, causes of bank failures, warning signals in predicting bank failures. Bank support mechanism, problems to bank, regulatory support, bank's supervision, financial crisis to bank. Regulatory cycle.	6
3.	**Business Loan and Micro Credit:** Loan Proposals, Classification of loans based on pricing, Methods of sanctioning loans	2
4.	**Liquidity functions of Banks:** Liquidity management & conflict, action plan, time bucket	2
5.	**Bank Merger and Rating of Banks:** Merger objectives, Stewart's motivating forces, evaluating mergers. Business risk of banks, ratio used in bank rating, application of bank grading.	3
6.	**Indian Financial System:** Financial system, Financial Assets, Financial Intermediaries, Financial Markets, Classification, Components of Financial Market, Financial	10

	Instruments, Multiplicity of Financial Instruments. Money Market and Capital Market and their Features, Objectives, Features of a Developed Money Market, Importance of Money Market, Composition of Money Market, Money Market Instruments, Structure of Indian Money Market, Features of Indian Money Market Relationship between New Issues Market and Stock Exchange, Functions of New Issue Market, methods of floating of new Issues, Players in the New Issue Market, general guidelines for new issue, Recent regulations for IPO. Control Over Secondary Market, Registration of Stock Brokers, Registration Procedure, Listing of securities, Method of Trading in a Stock Exchange, settlement procedure, online trading, defects of Indian capital markets, Depository services, Emergence of NSE, Objectives, Features of NSE- Comparative analysis of BSE & NSE functioning	
7.	**Mutual Fund & Merchant Banking & Credit Rating Agencies:** Mutual Fund's Concept, Types, Nature – NAV & SIP Merchant Banking's Concept, Types, Functions. Trends of Merchant Banking in India. 10. Credit Rating Agencies: Concept - Functions - Different Credit Rating Agencies – Popular Symbols – SEBI & Credit Rating	4
8.	**Financial Services:** Discounting, Factoring – meaning, Types, cost and benefits, Factoring v/s discounting; Forfaiting – working of forfaiting, benefits. Securitisation of Debt – Types of securities, structure and benefits of securitization, securitization v/s factoring.	4
9.	Case Study	3
Total		**40L**

Course Outcomes:	
After completion of the course, students will be able to:	
1.	Apply strategies to define goals, functions of securities, risk involved in business, securities valuation.
2.	Discuss the Indian Financial System and multiplicity of Financial Instruments.
3.	Organise Money Market, Primary Market and Secondary Market and compare it with the developed market.
4.	Determine Financial Services, Mutual Funds, Merchant Banking and Credit Rating Agencies in India.

Learning Resources:	
1.	M.Y. Khan, Indian Financial System, Tata Mc Graw Hill, Delhi
2.	Jeff Madura, Financial Markets And Institutions, CenGage Learning, Delhi
3.	H.R. Machiraju, Indian Financial System, Vikas Publishing House, Delhi
4.	Pathak, The Indian Financial System, Pearson Education India
5.	Fabozzi: Financial Markets & Institutions, Pearson

6.	Guruswamy: Fianacial services and Markets, Thomson Learning
7.	Khan: Indian Financial Systems, Tata McGraw-Hill

Corresponding NPTEL/SWAYAM Courses:			
Sl. No.	**Course Name**	**Instructor Name**	**Host Institute**
1	Financial Institutions and Markets	Prof. Jitendra Mahakud	IIT Kharagpur
	Course Link: https://onlinecourses.nptel.ac.in/noc20_mg10		

Course Name:	**International Finance**		
Course Code:	MBA-FM 404	**Category:**	Management Science Course
Semester:	Fourth	**Credit:**	4
L-T-P:	4-0-0	**Pre-Requisites:**	Basic concept of Managerial Finance
Full Marks:	100		
Examination Scheme:	Semester Examination:70	Continuous Assessment:25	Attendance:05

Course Objectives:	
1.	To provide a brief overview on the monetary interactions that transpire between two or more countries
2.	To focus on focuses on areas such as foreign direct investment and currency exchange rates.

Course Contents:		
Module No.	**Description of Topic**	**Contact Hrs.**
1.	**International Finance:** Overview, Globalization and Multinational firm, (Theory), International Monetary System, Balance of payment (Theory), Market for Foreign Exchange (Theory), International Parity Relationship & Forecasting Foreign Exchange rate. (Theory &Numerical)	10
2.	**Forward Exchange Arithmetic (Theory & Numerical):** Exchange Arithmetic, Forward Exchange contracts, Forward Exchange rate based on Cross rates, Interbank deals, Execution, cancellation, Extension of Forward contract	9
3.	**International Financial Markets & Cash Management:** International Banking & Money market (Theory), International Bond Market, LIBOR, (Theory), International Equity Market (ADR, GDR, EURO), Multinational Cash Management, (Theory)	9
4.	**International Contract & Procedure:** Letter of credit- Meaning & Mechanism, Types of letter of Credit, Operation of Letter of Credit Managing Exposure - (Theory & Numerical) - Management of Economic Exposure, Management of Transaction Exposure, Management of Translation Exposure	9
5.	**Transfer Pricing:** Cross-border currency volatility management	3
Total		**40L**

Course Outcomes:	
After completion of the course, students will be able to:	
1.	To describe the structure of the global financial system, the functions and main elements..
2.	To describe the basics of the global financial system stability.
3.	To study the history of the global financial system regulation.
4.	To name the world financial institutions, its functions and structure.

Learning Resources:	
1.	P.G. Apte International Financial Management McGraw Hill 2017, 7th Edition.
2.	Cheol S. Eun & Bruce G. Resnick International Financial Management McGraw Hill 2017, 7th Edition.
3.	Jeff Madura International Financial Management Cengage 2015, 12th Edition.
4.	Alan C. Shapiro Multinational Financial Management Wiley India, Latest Edition.

Corresponding NPTEL/SWAYAM Courses:			
Sl. No.	**Course Name**	**Instructor Name**	**Host Institute**
1	International Finance	Dr. Arun K. Misra	IIT Kharagpur
	Course Link: https://nptel.ac.in/courses/110105057		

Course Name:	**Financial Modelling with Excel**		
Course Code:	MBA-FM 405	**Category:**	Management Science Course
Semester:	Fourth	**Credit:**	3
L-T-P:	3-0-0	**Pre-Requisites:**	The basic concept of Managerial Finance
Full Marks:	100		
Examination Scheme:	Semester Examination:70	Continuous Assessment:25	Attendance:05

Course Objectives:	
1.	To become well-versed in intermediate-level Microsoft Excel functions for financial modeling.
2.	To analyze, understand, and interpret the performance of companies through their financial statements
3.	To identify revenue and cost drivers and start forecasting data.
4.	To build scenarios for financial modelling
5.	To develop financial models from scratch without using readymade templates.

Course Contents:

Module No.	**Description of Topic**	**Contact Hrs.**
1.	**Introduction to Financial Modelling:** Definition and importance of financial modeling, overview of Excel for financial modeling, types of financial models (valuation, budgeting, forecasting), basic Excel tools and shortcuts	5
2	**Intermediate-level Excel for Financial Modelling:** Formatting of Excel sheets, use of Excel formula functions, advanced modelling techniques, extrapolation and histogram	5

3.	**Analysis of Financial Statements:** Introduction to financial statement analysis, financial reporting mechanics, understanding Income Statement, Balance Sheet, Cash Flow Statement, financial analysis technique	5
4.	**Financial Ratios:** Ratio analysis of industries, Du Pont analysis, preparation of financial analysis report	5
5.	**Business Finance:** Time value of money, long-term financing, cost of capital, measures of leverage, project finance, project evaluation, stages of project, costs during investment phase, life of project, decision making	5
6.	**Risk Management:** Risk analysis in project appraisal, simulation in project appraisal, valuation concepts, determination of value drivers, discounted cash flow valuation, risk analysis in valuation	5
Total		**30L**

Course Outcomes:	
After completion of the course, students will be able to:	
1.	The student should be comfortable working in Excel.
2.	The student should be able to use various financial and other Excel tools.
3.	Introduction to the various modeling techniques.
4.	Prepare reports and interpret data using Excel.
5.	Prepare the financial statements using Excel.

BUSINESS ANALYTICS (MAJOR)

Course Name:	**Data Analytics using Big Data**		
Course Code:	MBA-BA 402	**Category:**	Computer Science and Engineering Course
Semester:	Fourth	**Credit:**	3
L-T-P:	3-0-0	**Pre-Requisites:**	Should have knowledge of one Programming Language, Practice of SQL (queries and sub queries)
Full Marks:	100		
Examination Scheme:	Semester Examination:70	Continuous Assessment:25	Attendance:05

Course Objectives:	
1.	Understand about commonly used terms and techniques related to data analytics that can be used by managers to make better decisions.
2.	Learn foundational concepts of Apache Hadoop and HDFS, MapReduce, and their ecosystems.
3.	Gain practical experience with AWS services & Apache Spark for Big Data processing and analysis.
4.	Develop problem-solving skills to derive insights from Big Data using industry-standard tools.

Course Contents:		
Module No.	**Description of Topic**	**Contact Hrs.**

1	**Introduction to Big Data and Analytics**: **Types of Digital Data**: Structured, Unstructured, and Semi-structured Data **Overview of Big Data**: Characteristics (Volume, Variety, Velocity, Veracity, Value), Big Data vs. Traditional Data	2
2	**Data Analysis Techniques:** Regression analysis , Classification techniques , Clustering techniques , Association rules analysis	6
3	**Hadoop Ecosystem:** **Introduction to Hadoop:** Hadoop Distributed File System (HDFS), Core Hadoop Components **HDFS Concepts:** The Design of HDFS, HDFS Concepts, Command Line Interface, Hadoop file system interfaces, Data Blocks, NameNode, DataNode **Hadoop Ecosystem Tools:** Overview of Pig, Hive, HBase, and Sqoop	4
4	**Map Reduce Paradigm**: **Anatomy of Map Reduce Job**: Input Splits, Mapper, Reducer **Map Reduce Features**: Key-Value Pairs, Combiner, Partitioners, Shuffle and Sort **Job Scheduling and Failures**: YARN, Fault Tolerance in MapReduce	4
5	**Introduction to Apache Spark:** What is Apache Spark? How is it different from Hadoop MapReduce? Spark ecosystem: Core, SQL, Streaming, MLlib, GraphX (just an overview) Use-cases in business: faster ETL, real-time analytics, recommendation engines	4
6	**Spark Architecture:** Key components: Driver, Executors, Cluster Manager Concept of RDDs vs Data Frames DAG (Directed Acyclic Graph) and lazy evaluation (conceptual level)	4
7	**PySpark and Data Processing:** Why PySpark for business analytics (Python-friendly + scalable) Data ingestion (CSV/JSON), basic transformations (filter, groupBy, join) Real-world applications: e.g., customer churn, sales trend analysis.	4
8	**Spark SQL:** Importance of structured data in analytics, Writing SQL queries on big data using Spark SQL, Business case: querying large sales data with Spark SQL.	2
Total		**30L**

Course Outcomes:	
After completion of the course, students will be able to:	
1	Understand the principles of Big Data and its applications in business analytics

2	Understand the components of Hadoop, HDFS and Map-Reduce
3	Understand Spark Architecture along with PySpark implementation
4	Solve real-world business problems using advanced analytics techniques with Visualization

Learning Resources:	
1	Big Data Black Book, Dreamtech
2	Big Data and Analytics by Subhashini Chellappan Seema Acharya (Author) , Wiley Publications
3	Tom White " Hadoop: The Definitive Guide" Third Edit on, O'reily Media, 2012
4	Mastering Apache Spark by Mike Frampton Packt Publishing, 2015
5	Jisha Mariam Jose Hadoop Practice Guide: SQOOP, PIG, HIVE, HBASE for Beginners,Notion Press
6	Michael Mineli, Michele Chambers, Ambiga Dhiraj, "Big Data, Big Analytics: Emerging Business Intelligence and Analytic Trends for Today's Businesses", Wiley Publications, 2013.

Corresponding NPTEL/SWAYAM Courses:			
Sl. No.	**Course Name**	**Instructor Name**	**Host Institute**
1	Big Data Computing	Prof. Rajiv Misra	IIT Patna
	Course Link: https://nptel.ac.in/courses/106104189		
2	Introduction to Data Analytics	Prof. Nandan Sudarsanam, Prof. Balaraman Ravindran	IIT Madras
	Course Link: https://nptel.ac.in/courses/110106072		

Course Name:	**Multivariate Data Analysis**		
Course Code	MBA-BA 403	**Category:**	Computer Science and Engineering Course
Semester:	Fourth	**Credit:**	4
L-T-P:	4-0-0	**Pre-Requisites:**	A reasonable level of competence in both statistics and mathematics
Full Marks:	100		
Examination Scheme:	Semester Examination:70	Continuous Assessment:25	Attendance:05

Course Objectives:	
1	This course describes the underlying theory for the analysis of multivariate data
2	The course will address both the underlying mathematics and problems of applications.

3	This course is designed to provide students with a working knowledge of the basic concepts underlying the most important multivariate techniques, with an overview of actual applications in various fields, and with experience in actually using such techniques on a problem of their own choosing.

Course Contents:

Module No.	Description of Topic	Contact Hrs.
1	**Modeling and inference using the multivariate normal distribution:** • Multivariate data and models • Multivariate Normal distribution • Traditional inference: Multivariate Regression, MANOVA, etc • Links with mixed linear models and hierarchical modeling.	8
2	**Exploratory techniques based eigenvalue and singular decomposition:** • Singular value decomposition (SVD) of a data matrix; special decomposition • Principle Component Analysis • Factor Analysis • Canonical Correlation	8
3	**Classification and Clustering:** • Linear Discrimination • Classification Trees • Hierarchical Clustering • K-means Clustering • Multidimensional Scaling	7
4	**Functional data analysis:** • Functional PCA • Functional Classification • Functional Clustering	8
5	A real life project consists of data analysis of a data set using the techniques covered in Module I to IV. Students may choose the data set according to their interest. Students are encouraged to use the R/ MATLAB/ Python language to carry out the analyses of the project.	9
Total		**40L**

Course Outcomes:

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

	Understand underlying theory for the analysis of multivariate data.
	Able to choose appropriate procedures for multivariate analysis.
	Use the R/ Splus/ SAS/ MATLAB/ Python language to carry out analyses. And Interpret the output of such analyses.

Learning Resources:	
	Applied Multivariate Statistical Analysis, 5th ed. Prentice Hall by Johnson, R.A. and Wichern, D.W. (2002).
	Mathematical Tools for Applied Multivariate Analysis, Academic Press, 1976 by Green and Carroll, .
	Market Research and Analysis, Irwin, 1989 by Lehmann, .
	An R and S-plus companion to multivariate analysis. Springer by Everitt, B. (2005).
	Structural Equations with Latent Variables Wiley, 1989 by Bollen, .

Corresponding NPTEL/SWAYAM Courses:			
Sl. No.	**Course Name**	**Instructor Name**	**Host Institute**
1	Applied Multivariate Statistical Modeling	Dr J Maiti	IIT Kharagpur
	Course Link: https://nptel.ac.in/courses/110105060		
2	Multivariate Procedures with R	Prof. Shalabh	IIT Kanpur
	Course Link: https://onlinecourses.nptel.ac.in/noc24_mg68		

Course Name:	**Data Visualization using Business Intelligence Tools**		
Course Code:	MBA-BA 404	**Category:**	Computer Science and Engineering Course
Semester:	Fourth	**Credit:**	3
L-T-P:	3-0-0	**Pre-Requisites:**	Basic concepts of Computer
Full Marks:	100		
Examination Scheme:	Semester Examination: 70	Continuous Assessment: 25	Attendance: 05

Course Objectives:	
1	To enable the students to analyze large commercial datasets using Business Intelligence/Business Analytics tools to generate insights with clear visual presentation
2	To develop the ability to apply the knowledge of BI tools and techniques for providing solutions to an organization's real life problems.

Course Contents:		
Module No.	**Description of Topic**	**Contact Hrs.**
1	**Introduction to Business Intelligence:** Concept of business value from corporate data, Data Source, Role of Business Intelligence (BI) in decision-making, Business Intelligence vs. Business Analytics vs. Data Analytics, Business Analytics Workflow	4
2	**Data Management:** Data warehousing concepts, ETL (Extract, Transform, Load) processes, Data lakes vs. Data warehouses, Handling structured & unstructured data, Introduction to Content Management Systems (CMS)	4

3	**Business Analytics & Data Mining:** Knowledge discovery in databases, Data mining techniques & applications, Predictive and Prescriptive Analytics, Relationship between BI and Corporate Strategy	4
4	**Data Visualization Principles & Techniques:** Fundamentals of Data Visualization, Dashboard design & best practices, Visualization techniques.	4
5	**BI Tools & Implementation:** Selection of BI/BA tools for industry use cases, Data manipulation and visualization, Introduction to SQL for BI applications, Role of AI & Automation in BI	4
6	**Business Intelligence Tools:** Power BI, Tableau, Basic functions, Data connectivity, Data modelling, Report creation, Interactive dashboards, Advanced analytics features, Introduction to Google Data Studio, web-based reporting	6
7	Privacy, Ethical, Legal issues associated with BI Implementation, Decision Support Systems, Expert Systems and Executive Information Systems	4
Total		**30L**

Course Outcomes:	
After completion of the course, students will be able to:	
1	Apply suitable design principles in the creation of presentations and visualizations
2	Select appropriate data visualization techniques for given particular requirements imposed by the data
3	Present data with visual representations for any kind of target audience, task, and data
4	Create multiple versions of digital visualizations using Excel, R and Tableau.

Learning Resources:	
1	Data Visualization - A Practical Introduction By Kieran Healy
2	Storytelling With Data: A Data Visualization Guide for Business Professionals By Cole Nussbaumer Knaflic
3	Big Data Visualization, By James W Miller
4	High Impact Data Visualization with Power View, Power Map, and Power BI, By Adam Aspin
5	Big Data & Hadoop, By V.K. Jain, Khanna Publishing House
6	Visual Analytics with Tableau 1st Edition by Alexander Loth ,Wiley Publication

Corresponding NPTEL/SWAYAM Courses:

Sl. No.	Course Name	Instructor Name	Host Institute
1	Business Intelligence & Analytics	Prof. Saji K Mathew	IIT Madras
	Course Link: https://onlinecourses.nptel.ac.in/noc26_cs64		

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Course Name:	**Business Forecasting & Time Series Analysis**		
Course Code:	MBA-BA 405	**Category:**	Computer Science and Engineering Course
Semester:	Fourth	**Credit:**	4
L-T-P:	4-0-0	**Pre-Requisites:**	Statistics & Quantitative Techniques
Full Marks:	100		
Examination Scheme:	Semester Examination : 70	Continuous Assessment: 25	Attendance: 05

Course Objectives:	
1.	Students master the framework of business forecasting
2.	Students master the use of Excel & SPSS for analyzing the data
3.	Students apply the forecasting methods to evaluate the variables of interest
4.	Students use the result to make the suggestion in the business and economic contexts

Course Contents:

Module No.	Description of Topic	Contact Hrs.
1	Introduction to Business Forecasting, Overview of the forecast, Review of Statistics, Linear Regression Model; Experiment	5
2	Introduction to Forecasting with Regression Methods, RMSE and Coefficient of Determination, Introduction to Multiple Regression , Statistical Inference in Multiple Regression; Multiple Linear Regression Model ii)Time Series Regression experiment	7
3	Comparative Analysis Using Regression ,Variable Selection in Multiple Regression, Model Selection in Regression, Checking Regression Models ,Autocorrelation in Regression	6
4	**Introduction of Time Series :** Some representative Time series, Terminology, Objective of Time Series, Approaches to Time Series, Types of Variation, Trend and Seasonal Variation;i)Modeling and Forecasting Trend experiment ii)Modeling and Forecasting Seasonality experiment	6
5	Time-Series Decomposition and Box-Jenkins (ARIMA)Types of Forecasting Models Concept of Auto correlation and correlogram , Stationary process ; Decomposition of Different Time Series Component with some example. Checking the Stationary with Different methods [Dicky Fuller Test, Kwiatkowski–Phillips–Schmidt– and etc]. Concept of Unitroot test and Inevertibilty. Concept of Facebook Prophet.	6
6	Identification of ARMA models, ARIMA Models, ARIMA Models Identification, Building better models from ARIMA. Vector-Error Correlation Model. Concept of Validation using LSTM	5
7	Parameter Estimation and Diagnostic checking, Forecast using ARIMA models, Modeling Seasonal Data ,Intervention Analysis	5
Total		**40L**

Course Outcomes:	
After completion of the course, students will be able to:	
1.	Identify, collect, and organize relevant data useful for forecasting
2.	Identify the appropriate forecasting methods (regression, time series, smoothing, etc.) for any given data.
3.	Forecast using regression
4.	Interpret the results and write a basic report useful for management for decision making

Learning Resources:	
1	"Forecasting and Time Series", 4th Edition, by Bowerman and O'Connell, Duxbury
2	Francis X. Diebold, *Elements of Forecasting,* 4th Edition, South-western Cengage Learning, 2007
3	J. Holton Wilson and Barry Keating, *Business Forecasting with ForecastX™,* 6th Edition McGraw Irwin, John Galt Solutions, Inc.
4	Introductory Time Series, PAUL S.P. Cowpertwait . Andrew V. MetcalfeSpringer
5	The Analysis of Time Series An Introduction[Sixth Edition]Chris Chatfield CHAPMAN & HALL/CRC
6	Shumway, R.H. and D.S. Stoffer, Time Series Analysis and Its Applications, Springer Verlag, New York, 2000.
7	West, M. and J. Harrison, Baysian Forecasting and Dynamic Models, Second Edition, Springer-Verlag, New York, 1997.

Corresponding NPTEL/SWAYAM Courses:			
Sl. No.	**Course Name**	**Instructor Name**	**Host Institute**
1	Business Forecasting	Prof. Pankaj Dutta	IIT Bombay
	Course Link: https://onlinecourses.nptel.ac.in/noc26_mg13		
2	Time Series Modelling and Forecasting with Applications in R	Prof. Sudeep Bapat	IIT Bombay
	Course Link: https://onlinecourses.nptel.ac.in/noc26_cs20		

MARKETING MANAGEMENT (MAJOR)

Course Name:	**Service Marketing and CRM**		
Course Code:	MBA-MM 402	**Category:**	Management Science Course
Semester:	Fourth	**Credit:**	4
L-T-P:	4-0-0	**Pre-Requisites:**	Knowledge of General Marketing
Full Marks:	100		
Examination Scheme:	Semester Examination: 70	Continuous Assessment: 25	Attendance: 05

Course Objectives:	
1	To understand the concept of services as intangible products and different key aspects of Service Marketing
2	To understand and analyze emerging service environment in India and the world.

3	To understand and analyze Customer Relationship Management and its implementation process

Course Contents:		
Module No.	**Description of Topic**	**Contact Hrs.**
1	**Service Concept:** Definition, Characteristics of services, Tangibility continuum, Marketing mix for services, Different types of service sectors – traditional and new, Service experience – Four Categories of Services People Processing, Mental Processing, Possession Decision Making –- Processing, and Information Prepurchase Stage, Service Stimulus Processing;; Customer Encounter Stage and Post Encounter Stage; Customer Expectations and Perceptions of Services; Moments of Truth, Zone of Tolerance. Role of services in the economy	8
2	**Service Strategy Planning:** Understanding the customer and competition, Positioning services, Service triangle concept; Distinguish Approx. Percentile weightage actions between Services and Goods; Services and Technology, technology in service encounter, emergence of self service, automation in services. Creating the Service Product: Creating service product, Customer value hierarchy, Flower of service, Service product mix, and Branding service products.	6
3	**Service Marketing Pricing and Communications:** Approaches to pricing of services, Elements of promotional mix for services. Designing and Managing Service Demand and Capacity: Designing service delivery system, Delivery through Intermediaries, Franchising, Electronic Channels, Self-Service Technologies; Service blue printing, Customer as co-producer, Capacity constraints, Demand patterns, Strategies for matching capacity and demand, Wait lines and reservations.	9
4	**Expanded Marketing Mix:** People – Employees' Role in Service Delivery, Service Leadership and Culture, Process – Service Blueprinting, Service Process Redesign Physical Evidence - Servicescape, Service Environments, Managing Capacity and Demand: Understanding Capacity, Demand Patterns, Strategies for Matching 5L Capacity and Demands Different Services: Nature and characteristics of financial, hospitality, health-care, educational & professional, logistics, entertainment services.	5
5	**CRM Definition, Need and Importance:** Conceptual Framework of Customer Relationship Management; The Value Pyramid, Customer Interaction Cycle, Customer Profiling and Total Customer Experience, Goals of a CRM Strategy and Obstacles, CRM Solutions Map. CRM - Issues and Strategies; Winning Markets through Effective CRM; CRM as a business strategy, CRM Process, Effective Customer Relation Management through Customer Knowledge Management.	7
6	**Status of Customer Relationship Management in service industry in India:** Relevance of CRM for Hospital Services; Customer Relationship Management in Banking and Financial Services; CRM in Insurance Sector, Supply-Demand Mismatches and their impact on CRM; The Past, Present and Future of CRM	5
Total		**40L**

Course Outcomes:	
After completion of the course, students will be able to:	
1	Understand the Concept of Services as intangible products and different key aspects of Service Marketing
2	Understand and analyze the relevance of the services in different Industries
3	Examine the characteristics of the services industry and develop the service management strategy accordingly
4	Apply the concept of CRM, the benefits delivered by CRM, the contexts in which it is used, the technologies that are deployed and how it can be implemented.
5.	Design customer relationship management strategies by understanding customers' preferences for the long-term sustainability of the organizations

Learning Resources:	
1	Zeithaml, V.A., Bitner, M J, Grembler, D.D. & Pandit, A.: Service Marketing, TMH
2	Rajendra Nargundkar, Services Marketing: Text & Cases, Tata McGraw Hill
3	Srinivasan R.: Services Marketing; PHI
4	Jagdish N Sheth, Parvatiyar Atul, G Shainesh, Customer Relationship Management: Emerging Concepts, Tools and Applications, Tata McGraw Hill
5	Judith W. Kincaid: Customer Relationship Management Getting it Right, Pearson Education

Corresponding NPTEL/SWAYAM Courses:			
Sl. No.	**Course Name**	**Instructor Name**	**Host Institute**
1	Services Marketing: A Practical Approach	Prof. Biplab Datta	IIT Kharagpur
	Course Link: https://onlinecourses.nptel.ac.in/noc25_mg58		
2	Services Marketing : Concepts & Applications	Shainesh G	Indian Institute of Management, Bangalore
	Course Link: https://onlinecourses.swayam2.ac.in/e-learning/preview/imb21_mg01		

Course Name:	**Rural and Agri-Marketing**		
Course Code:	MBA-MM 403	**Category:**	Management Science Course
Semester:	Fourth	**Credit:**	4
L-T-P:	4-0-0	**Pre-Requisites:**	Knowledge of General Marketing
Full Marks:	100		
Examination Scheme:	Semester Examination:70	Continuous Assessment:25	Attendance:05

Course Objectives:	
1.	To familiarize the students with the appropriate concepts and techniques in the area of rural marketing.
2.	To emphasize on the different necessary adaptations to the rural marketing mix (4 A's) to meet the needs of rural consumers.
3.	To understand and analyze the role of Government and different agencies in the area of rural marketing

4.	To manage and implement the reference group influence, different roles of family and household affecting consumer behaviour
5.	To understand and analyse the concept and methodology for conducting the research in rural market

Course Contents:

Module No.	Description of Topic	Contact Hrs.
1.	Rural Marketing: Meaning, scope, definition and importance, Rural versus urban mindsets, growth of rural markets, basic differences between rural, semi urban and urban markets, rural market research and profile of rural consumer, classification of rural consumer based on economic status, profile of rural consumer, rural consumer behavior.	9
2.	Basis of market segmentation, multi attribute segmentation, classification of markets, regulated market, defects/problems of regulated market, role of regulated markets on marketing of agricultural produce, significance of regulated markets to agriculturists. Rural communications, role of media in rural markets, conventional media in rural market, the main problems in rural communication.	9
3.	Product strategies, pricing strategies, distribution strategies, production strategies, methods of sale, hath system, private negotiations and quotations on samples, magnum sale methods in rural market. Open auction method, sales force management for rural marketing and marketing agencies managing the sales force, sales force management in rural marketing, prevalence of beoparis in rural market.	7
4.	Government intervention in marketing system, role of agencies like, council of state agricultural marketing boards, state trading, cooperative marketing, types of cooperative marketing societies, co- operative processing, national agricultural cooperative marketing federation, national co-operative development corporation, public distribution system, food corporation of India, directorate of marketing and inspection, national institute of agricultural marketing.	8
5.	Agricultural credit policy, institutional agreements for agricultural credit, crop insurance, agricultural insurance role of it in rural marketing infrastructure, importance and scope, modern techniques for rural distribution.	7
Total		**40L**

Course Outcomes:

After completion of the course, students will be able to:	
1.	Understand the scope, growth, importance of rural marketing and rural environment.
2.	Identify the classification of rural consumer based upon the economic status and rural consumer behavior.
3.	Examine the rural marketing segmentation, the significance and problems of regulated markets.
4.	Analyze classification of markets and the role of regulated markets on marketing of agricultural products.
5.	Discuss the role of media in rural marketing and the main problems in rural communication.

Learning Resources:	
1.	Raja Gopal." Rural Marketing", Himalaya Publishing
2.	Ramkishen Y," New Perspectives on Rural Marketing", Oxford University Press
3.	K S Habeeb Rahman, "Rural Marketing in India", Himalaya Publishing
4.	R. V. Bedi "Rural Marketing in India", Himalaya Publishing.

Corresponding NPTEL/SWAYAM Courses:

Sl. No.	Course Name	Instructor Name	Host Institute
1	Rural Marketing: Principles, Strategies, and Practices	Dr. Rajkiran Prabhakar, Dr. Rajeev Kumar	Banaras Hindu University
	Course Link: https://onlinecourses.swayam2.ac.in/e-learning/preview/ini25_mg06		
2	Rural Marketing	Dr. Pushkar Dubey	Pandit Sundarlal Sharma (Open) University
	Course Link: https://onlinecourses.swayam2.ac.in/e-learning/preview/nou25_mg25		

Course Name:	**Digital Marketing and E-Business**		
Course Code:	MBA-MM 404	**Category:**	Management Science Course
Semester:	Fourth	**Credit:**	4
L-T-P:	4-0-0	**Pre-Requisites:**	Knowledge of General Marketing
Full Marks:	100		
Examination Scheme:	Semester Examination:70	Continuous Assessment:25	Attendance:05

Course Objectives:	
1.	To review key trends within the Digital Marketing landscape.
2	To explain the holistic impact of all Digital Marketing channels.
3.	To examine an example of each Digital Marketing channel.
4.	To understand and analyse key aspects of E-Business
5.	To understand and analyse the relationship between digital marketing and e-business

Course Contents:

Module No.	Description of Topic	Contact Hrs.
1.	E-Commerce /E-Business: Introduction, Advantages and Disadvantages, Benefits, Features, Business models of E-Commerce, Model based on revenue models, Implementation Ecommerce business, Infrastructure Requirement for E-Commerce, Different types of Networking for E-commerce, Internet, Extranet and Intranet, Intelligent System, Risk of Ecommerce –Overview	7
2.	M-Commerce: Definition, Classification, Advantages and Disadvantages, Benefits, Pitfalls of M-Commerce, Hand Held Devices, Mobility and commerce, Mobile Computing, Wireless Web, Payment Mode. Learning and Memory: Demographic and psychographic characteristics and market segmentation, Personality, personal values, lifestyle concepts and measurements	7
3.	E-Strategy: Overview, Strategic Methods for developing E-commerce, E-Advertisement, Payment Mode, E-Cheque, E-cash, E-Threats and Protection.	4
4.	ERP and SCM: Definitions-ERP, CRM, SCM, Concept of ERP, Evolution of ERP, Scope and Problem of ERP selection and Implementation, Selection of EEP process, Feature of Commercial Software, Concept of CRM, Features, Applications, SRM portal, SCP tools, SCE, Framework, Internet's effect on Supply Chain Power, Case Study.	7
5.	E- Marketing/ Digital Marketing: E-shopping, Role, Policies, Online Marketing and Offline marketing, SEO, SMM, SEM, Meta Tags, Content Marketing, Marketing in Digital Age, Telemarketing, Influencer Marketing: Digital Advertisements in OTT Platforms. Case Study.	5
6.	Campaign Marketing, E-mail Marketing, Display Advertising, Blog Marketing, Viral Marketing, Podcasts and Vodcasts. Digital Marketing on Various Social Media Platforms. Online Advertisement, Online Marketing Research, Online PR. Web Analytics. Promoting Web Traffic. Latest Developments and Strategies in Digital Marketing. EDI: Introduction, Definition, Features, Benefits, Application, Model, Protocol	5
7.	Electronic Payment System : Introduction – Online payment systems – prepaid and postpaid payment systems – e– cash, e– cheque, Smart Card, Credit Card , Debit Card, Electronic purse – Security issues on electronic payment system – Solutions to security issues – Biometrics – Types of biometrics. Legal and ethical issues in E– Commerce: Security issues in E–	5

	Commerce–Regulatory framework of E– commerce. Case Study.	
Total		**40L**

Course Outcomes:	
After completion of the course, students will be able to:	
1.	Develop a digital marketing plan that will address common marketing challenges
2.	Articulate the value of integrated marketing campaigns across SEO, Paid Search, Social, Mobile, Email, Display Media
3.	Recognize Key Performance Indicators tied to any digital marketing program
4.	Improve Return on Investment for any digital marketing program
5.	Launch a new, or evolve an existing, career path in Digital Marketing.

Learning Resources:	
1.	Electronic Commerce –Technologies and Applications: Bhaskar Bharat, TMH
2.	Frontiers of Electronic Commerce: Kalakota, Whinston, Pearson Education
3.	E-Commerce: Strategy Technologies and Applications: Whiteley, David, TMH
4.	Fundamentals of Digital Marketing: Puneet Singh Bhatia, Pearson Education
5.	Understanding Digital Marketing: Damian Ryan, Pearson Education

Corresponding NPTEL/SWAYAM Courses:			
Sl. No.	**Course Name**	**Instructor Name**	**Host Institute**
1	Fundamentals of Digital Marketing	Prof. Saini Das, Prof. Atanu Ghosh	IIT Kharagpur
	Course Link: https://onlinecourses.nptel.ac.in/noc26_mg06		
2	Digital Marketing	Dr.Tejinderpal Singh	Panjab University Chandigarh
	Course Link: https://onlinecourses.swayam2.ac.in/e-learning/preview/ugc19_hs26		

Course Name:	**Consumer Behaviour**		
Course Code:	MBA-MM 405	**Category:**	Management Science Course
Semester:	Fourth	**Credit:**	4
L-T-P:	4-0-0	**Pre-Requisites:**	Knowledge of General Marketing
Full Marks:	100		
Examination Scheme:	Semester Examination:70	Continuous Assessment:25	Attendance:05

Course Objectives:	
1.	To manage and implement the fundamental concepts of consumer behaviour and individual characteristics affecting consumer behaviour
2.	To emphasize on the different aspects of consumer perception, learning & memory, self-

	concept and consumer motivation affecting consumer behaviour
3.	To elucidate different aspects of attitude, culture, sub-culture, social class and reference group influence affecting consumer behaviour
4.	To manage the reference group influence, different roles of family and household affecting consumer behaviour
5.	To understand and analyse different aspects of organizational buying behaviour

Course Contents:

Module No.	Description of Topic	Contact Hrs.
1.	**Introduction to Consumer Behaviour:** Defining consumer behaviour, Impact on marketing strategies, Current trends in consumer behavior **Consumer Decision-Making Process:** Need recognition, information search, evaluation of alternatives, purchase decision, consumption and post-purchase evaluation, Variables that shape decision process- individual differences, psychological processes, environmental influences, Types of decision process – complex decision making, variety seeking, impulse buying, loyalty, degree of involvement in buying. Henry Assael's Model of Consumer Buying Behaviour	8
2.	**Individual Characteristics:** Demographic and psychographic characteristics and market segmentation, Personality, personal values, lifestyle concepts and measurements Consumer Perception: Marketing stimuli and perception, Perceptual selection - organization, interpretation, selective perception process **Learning and Memory:** Information acquisition and processing, Learning elements, Theories, Memory processes Learning and Memory: Demographic and psychographic characteristics and market segmentation, Personality, personal values, lifestyle concepts and measurements	7
3.	**Consumer Motivation:** Nature and role of motives, Classifying motives, Motive arousal, Motivation and involvement **Self-concept:** Perspective of self, Consumption and self concept, Gender roles	6

4.	**Attitude:** Characteristics and functions of attitude, Attitude development, Attitude theories and models, Role of belief in attitude formation, Relationship of attitude and behaviour, Attitude reinforcement and change **Culture Subculture and Social Class:** Nature of culture, Cultural values, Changing values, Cross-cultural understanding of consumer behaviour, Types of subculture and their influence on behaviour, Nature of social class, Social stratification	7
5.	**Reference Group Influence:** Nature and types of reference groups, How groups influence individuals, Opinion leadership, Word-of-mouth, Innovation and diffusion **Family and Household:** Structural and sociological variables affecting families and households, Family life cycles, Role behaviour, Conflict resolution, Changing role of women, Children and household consumer behavior	8
6.	**Organizational Buying Behaviour:** Organizational buyers versus consumers, Factors influencing business buying, Types of buying situations, Organizational buying process	4
Total		**40L**

Course Outcomes:	
After completion of the course, students will be able to:	
1.	Understand the fundamental concepts of consumer behaviour and individual characteristics affecting consumer behaviour
2.	Understand and analyse different aspects of consumer perception, learning & memory, self concept and consumer motivation affecting consumer behaviour
3.	Understand different aspects of attitude, culture, sub-culture, social class and reference group influence affecting consumer behaviour
4.	Understand reference group influence, different roles of family and household affecting consumer behaviour
5.	Understand and analyze different aspects of organizational buying behaviour

Learning Resources:	
1.	Shiffman & Kanuk: Consumer Behaviour; Pearson Education
2.	Assael, H.: Consumer Behaviour & Marketing Action; South-Western
3.	Blackwell, R.D., Miniard, P.W. & Engel, J,F.: Consumer Behaviour; South-Western
4.	Loudon & Bitta, Della: Consumer Behaviour; TMH
5.	Kumar: Conceptual issues in Consumer Behaviors; Pearson Education

Corresponding NPTEL/SWAYAM Courses:			
Sl. No.	**Course Name**	**Instructor Name**	**Host Institute**
1	Consumer Behaviour	Prof. Srabanti Mukherjee	IIT Kharagpur
	Course Link: https://onlinecourses.nptel.ac.in/noc26_mg40		
2	Consumer Behaviour	Dr. Sangeeta Sahney	IIT Kharagpur
	Course Link: https://nptel.ac.in/courses/110105029		

HUMAN RESOURCE MANAGEMENT (MAJOR)

Course Name:	**Strategic HRM**		
Course Code:	MBA-HR402	**Category:**	Management Science Course
Semester:	Fourth	**Credit:**	4
L-T-P:	4-0-0	**Pre-Requisites:**	Basic Knowledge of HRM
Full Marks:	100		
Examination Scheme:	Semester Examination:70	Continuous Assessment:25	Attendance:05

Course Objectives:	
1.	Understand the principles and strategic role of HRM in achieving organizational goals.
2.	Analyze the alignment between HR strategies and organizational strategies.
3.	Evaluate the use of HR metrics and analytics for decision-making.
4.	Develop competencies for managing change and fostering innovation through strategic HR practices.
5.	Integrate ethical considerations and global perspectives in strategic HR decision-making.

Course Contents:

Module No.	Description of Topic	Contact Hrs.
1.	**Introduction to Strategic HRM**: Concept and Evolution of SHRM, HRM vs SHRM: Strategic Perspectives, Role of HR as a Strategic Partner, Strategic HR Planning and Environmental Scanning, Linking Business Strategy with HR Strategy, Models of SHRM: Best Practice Model, Best Fit Model, and Resource-Based View, SHRM in Global Contexts: Opportunities and Challenges, Case Study: Strategic HRM in Action	8
2.	**Aligning HR Strategies with Organizational Goals:** Workforce Planning and Talent Management Strategies, Recruitment and Selection as a Strategic Process, Strategic Performance Management Systems, Employee Engagement and Retention Strategies, Compensation and Reward Management as Strategic Tools, Succession Planning and Leadership Development, Integrating HR Strategies with Corporate Social Responsibility (CSR), Case Study: Aligning HR and Corporate Strategy	8
3.	**HR Metrics, Analytics, and Technology**: Introduction to HR Metrics and Workforce Analytics, Measuring HR Effectiveness and ROI, Using Data for Strategic Decision-Making, Technology in HR: HRIS, AI, and Digital Transformation, Predictive Analytics in Talent Management, HR Dashboards and Visualization Tools, Ethical Considerations in HR Analytics, Case Study: Analytics-Driven HR Decision-Making	8
4.	**Managing Change, Innovation, and Culture:** Strategic Role of HR in Change Management, Creating a Culture of Innovation and Agility HR's Role in Mergers, Acquisitions, and Restructuring, Managing Diversity and Inclusion Strategically, Employer Branding and Employee Value Proposition (EVP), Conflict Management and Negotiation Strategies, Building Organizational Resilience through HR Practices, Case Study:	8

	Change and Culture Transformation	
5.	**Contemporary Issues and Future Trends in SHRM:** Ethics and Governance in SHRM, Strategic Workforce Management in Gig and Remote Work Economies, HR's Role in Sustainable Development Goals (SDGs), Global Talent Management and Expatriate Strategies, Impact of Artificial Intelligence and Automation on HR Strategies, Crisis Management and Business Continuity Planning, Future of Work: Challenges and Opportunities for SHRM, Case Study: Strategic HR Responses to Emerging Trends	8
Total		**40L**

Course Outcomes:	
After completion of the course, students will be able to:	
1.	Demonstrate a clear understanding of the principles, models, and frameworks of SHRM and its evolution as a critical organizational function
2.	Analyze and evaluate how HR strategies align with and support overall business objectives in diverse organizational contexts.
3.	Apply HR metrics and analytics to measure the effectiveness of HR functions and contribute to evidence-based decision-making
4.	Develop strategic solutions to manage change, foster innovation, and enhance organizational culture, ensuring sustainability and inclusivity.
5.	Critically examine contemporary issues, including ethical practices, global trends, and future challenges in SHRM, and recommend actionable strategies.

Learning Resources:	
1.	Armstrong, M. (2020). Strategic Human Resource Management: A Guide to Action (6th Edition). Kogan Page.
2.	K. Aswathappa Human Resource Management: Text and Cases, Publisher: McGraw-Hill Education
3.	B. K. Chatterjee, Strategic Human Resource Management, Publisher: Excel Books

Corresponding NPTEL/SWAYAM Courses:			
Sl. No.	**Course Name**	**Instructor Name**	**Host Institute**
1	Advances in Strategic Human Resource Management (HRM)	Prof. Ashish Pandey	IIT Bombay
	Course Link: https://onlinecourses.nptel.ac.in/noc26_mg15		
2	HRM Strategy Execution	Prof. Aditya Christopher Moses	Indian Institute of Management Ahmedabad
	Course Link: https://onlinecourses.swayam2.ac.in/e-learning/preview/imb26_mg47		

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Course Name:	**Human Resource Accounting & Audit**		
Course Code:	MBA-HR403	**Category:**	Management Science Course
Semester:	Fourth	**Credit:**	4
L-T-P:	4-0-0	**Pre-Requisites:**	Basic knowledge of cost models and HR functions
Full Marks:	100		
Examination Scheme:	Semester Examination:70	Continuous Assessment:25	Attendance:05

Course Objectives:	
1.	To enable the learners to understand the theoretical framework of human resource accounting and audit.
2.	To enable the learners to apply the methodology of HR accounting.
3.	To enable the learners to apply the methodology and strategy of HR audit.
4.	To enable the learners to apply the process of closure of HR audit and generation of audit report.

Course Contents:

Module No.	**Description of Topic**	**Contact Hrs.**
1.	**Introduction to Human Resource Accounting:** An Overview. Meaning, Need and Objectives of HR Accounting. Advantages and Limitations of Human Resource Accounting	4
2.	**Methods of Human Resource Accounting**: Cost of Production Approach. Historical Cost Model. Replacement Cost Model. Opportunity Cost. Capitalized Earnings Approach. Economic Value Model. Capitalization of Salary	8
3.	**Introduction to HR Audit:** Various approaches to HR Audit. HRM framework for HR Audit.	4
4.	**HR Audit Methods and Strategies:** Selection of Audit methods aligning with the HRM framework. Auditing Strategy, structure, management systems, styles and HR system. HR Audit Scorecard and Benchmarking.	8
5.	**Domains of HR Audit:** Auditing HR competencies. Auditing HR culture and Values. Auditing employee relations.	12
6.	**HR Audit Team and Audit Closure:** HR auditor and the auditing team. Generation of HR Audit report.	4
Total		**40L**

Course Outcomes:	
After completion of the course, students will be able to:	
1.	Understand the theoretical framework of human resource accounting and audit.
2.	Enable the learners to apply the methodology of HR accounting.
3.	Enable the learners to apply the methodology and strategies of HR audit.
4.	Enable the learners to apply the process of closure of HR audit and generation of audit report.

Learning Resources:	
1.	Prerna Sharma, Parveen Nagpal, & Mitali Shelankar, *Human Resource Accounting and Audit*
2.	Jac Fitz-enz, *How to Measure Human Resource Management*
3.	D. Prabakara Rao, *Human Resource Accounting*
4.	Trupti Shelke & Vibhav Galadagekar, *Human Resource Accounting and Auditing*
5.	Durdana Ovais Rajni Gyanchandani, *HR Audit*

Corresponding NPTEL/SWAYAM Courses:			
Sl. No.	**Course Name**	**Instructor Name**	**Host Institute**
1	Principles of Human Resource Management	Prof. Aradhna Malik	IIT Kharagpur
	Course Link: https://onlinecourses.nptel.ac.in/noc21_mg21		

Course Name:	**Organizational Development and Change Management**		
Course Code:	MBA-HR404	**Category:**	Management Science Course
Semester:	Fourth	**Credit:**	4
L-T-P:	4-0-0	**Pre-Requisites:**	Basic Knowledge of HRM
Full Marks:	100		
Examination Scheme:	Semester Examination:70	Continuous Assessment:25	Attendance:05

Course Objectives:	
1.	Understand the theories and practices of organizational change and development.
2.	Identify the need for change and analyze its impact on organizational performance.
3.	Equip students with skills to design, implement, and evaluate organizational development intervention
4.	Develop a strategic approach toward managing change effectively in diverse organizational contexts.
5.	foster understanding of the role of HR in driving and sustaining organizational

Course Contents:		
Module No.	**Description of Topic**	**Contact Hrs.**
1.	**Introduction to Organizational Change**: Concept and Nature of Organizational Change; Types of Change: Planned vs. Unplanned Change; Theories of Change: Lewin's Change Model, Kotter's 8-Step Model; Forces of Change: Internal and External; Resistance to Change: Causes and Overcoming Resistance	8
2.	**Organizational Development (OD):** Concept and Process: Definition and Nature of Organizational Development; History and Evolution of OD; Process of OD: Entry, Diagnosis, Action Planning, Intervention, Evaluation, and Exit; Role of OD Practitioners	8

3.	**Interventions in Organizational Development:** Diagnostic Interventions: Surveys, Interviews, and Workshops; Human Process Interventions: Sensitivity Training, Team Building, Conflict Resolution; Structural Interventions: Job Redesign, Process Reengineering; Strategic Interventions: Culture Change, Knowledge Management	8
4.	**Emerging Trends in Organizational Change and Development**: Technology-Driven Change and Digital Transformation; Agile Organizations and Change Management; Diversity and Inclusion in Change Initiatives; Sustainable Development and Corporate Social Responsibility.	8
5.	**Evaluation and Future Directions in OD**: Evaluating Change and Development Programs; Measuring Impact: ROI and Metrics for OD Interventions; Challenges in Sustaining Change; Future Directions in Organizational Change and Development	8
Total		**40L**

Course Outcomes:	
After completion of the course, students will be able to:	
1.	Analyze the dynamics of organizational change and development
2.	Assess and address resistance to change in organizational settings.
3.	Design and implement effective organizational development interventions.
4.	Apply diagnostic tools and models for organizational change.
5.	Evaluate the outcomes of change initiatives and development programs.

Learning Resources:	
1.	Cummings, T. G., & Worley, C. G. (2021). Organization Development and Change. Cengage Learning.
2.	Burnes, B. (2020). Managing Change: A Strategic Approach to Organizational Dynamics. Pearson
3.	French, W. L., & Bell, C. H. (2019). Organization Development: Behavioral Science Interventions for Organization Improvement. Prentice Hall.

Corresponding NPTEL/SWAYAM Courses:			
Sl. No.	**Course Name**	**Instructor Name**	**Host Institute**
1	Organization Development and Change in 21st Century	Prof. Ashish Pandey	IIT Bombay
	Course Link: https://onlinecourses.nptel.ac.in/noc20_mg56		
2	Managing Change in Organizations	Prof. KBL Srivastava	IIT Kharagpur
	Course Link: https://onlinecourses.nptel.ac.in/noc26_mg46		

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Course Name:	**HR Analytics**		
Course Code:	MBA-HR405	**Category:**	Management Science Course
Semester:	Fourth	**Credit:**	3
L-T-P:	3-0-0	**Pre-Requisites:**	Basic knowledge of HR cost-benefit analysis and statistics
Full Marks:	100		
Examination Scheme:	Semester Examination:70	Continuous Assessment:25	Attendance:05

Course Objectives:	
1.	To enable the learners to understand the theoretical foundation of HR analytics
2.	To enable the learners to understand the methodology of quantitative and qualitative aspects of HR analytics.
3.	To enable the learners to understand the statistical tools for analysis.
4.	To enable the learners to execute the projects based on the theoretical learning.

Course Contents:

Module No.	Description of Topic	Contact Hrs.
1.	**Introduction to HR Analytics:** Delivering Strategic Human Resource Management. Cost-Benefit Analyses for HR Interventions	4
2.	**Analytical Foundations of HR Measurement**	2
3.	**Quantitative Analysis:** Measuring Cost of Employee Separation.	3
4.	Measuring Effectiveness of Recruitment Process	3
5.	Measuring Effectiveness of Training and Development Programs	3
6.	Measuring Attitude of Employees	3
7.	**Quantitative Analysis:** Writing HR Blogs, Analyzing Blogs Using Sentiments Analysis, Analyzing Qualitative Data Collected Through Interviews & Focus Group Using Content Analysis	6
8.	**Application of statistical tools**: Descriptive and Predictive Analysis (Multiple Regression, Partial Least Square Structural Equation Modelling).	6
Total		**30L**

Course Outcomes:	
After completion of the course, students will be able to:	
1.	Enable the learners to understand the theoretical foundations and practical applications of HR analytics
2.	Enable the learners to apply the methodology of quantitative and qualitative aspects of HR analytics.
3.	Enable the learners to apply the statistical tools for analysis.

4.	Enable the learners to execute the projects based on the theoretical and practical learning.

Learning Resources:	
1.	Valerie Streets, Shonna D Waters, Rachael Johnson-Murray, Lindsay McFarlane, & Shonna D. Waters, *Human Resource Accounting and Auditing*
2.	Deepa Gupta, Mukul Gupta, & Parth Mukul Gupta, *HR Analytics—The Future of HR*
3.	Nishant Uppal, *Human Resource Analytics: Strategic Decision Making*

Corresponding NPTEL/SWAYAM Courses:			
Sl. No.	**Course Name**	**Instructor Name**	**Host Institute**
1	HR Analytics	Prof. Santosh Rangnekar, Prof. Abhishek Singh	IT Roorkee, XLRI Jamshedpur
	Course Link: https://nptel.ac.in/courses/110107492		
2	HR Analytics	Dr. Archana Shrivastava, Dr. Priyanka Mishra	Sri Balaji University, Pune
	Course Link: https://onlinecourses.swayam2.ac.in/e-learning/preview/imb26_mg53		

HOSPITAL ADMINISTRATION (MINOR)

Course Name:	**Quality Assurance in the Hospital Sector**		
Course Code:	MBA-HA402	**Category:**	Management Science Course
Semester:	Fourth	**Credit:**	4
L-T-P:	4-0-0	**Pre-Requisites:**	The basic concept of Hospital Administration
Full Marks:	100		
Examination Scheme:	Semester Examination:70	Continuous Assessment:25	Attendance:05

Course Objectives:	
1.	Clarify the distinctions between Quality Assurance, Quality Control, and Quality Improvement.
2.	Explore the goals and scope of QA in healthcare organizations.
3.	Introduce foundational concepts of quality care and quality management.
4.	Examine principles of Total Quality Management (TQM) and methodologies like Six Sigma, Lean, and Kaizen in healthcare.

Course Contents:		
Module No.	**Description of Topic**	**Contact Hrs.**
1.	**Introduction to Quality Assurance (QA):** Definition and importance of QA in healthcare. - Historical evolution of quality in hospitals. - Goals of quality assurance. - Difference between QA, quality control, and quality improvement.	4
2.	**Quality Management**: Introduction – Objectives - Historical Background – Concept of Quality Care and Quality Management – ISO 9000 Quality Management System - Effects	4

	and Benefits of ISO 9000 Management System – Present Indian Scenario – Organization of Quality Management System – Approaches to measurement of Quality.	
3.	**Quality Management Systems in Healthcare and Quality Indicators in Hospitals:** Principles of total quality management (TQM). - Concepts of Six Sigma, Lean, and Kaizen in hospitals. - ISO standards in healthcare. - Accreditation and certification processes (e.g., NABH, JCI). - Clinical quality indicators. - Operational quality indicators. - Patient satisfaction indicators. - Benchmarking and performance evaluation.	10
4.	**Quality Tools and Techniques:** Root cause analysis (RCA). -Failure modes and effects analysis (FMEA). - Fishbone diagram (Ishikawa). - Control charts and statistical process control (SPC). -PDSA cycle (Plan-Do-Study-Act). - Quality management frameworks: Six Sigma, Lean, TQM (Total Quality Management). -Process mapping and flowcharts. - Root cause analysis (RCA). -Failure mode and effects analysis (FMEA). -Key performance indicators (KPIs) and benchmarking.	10
4.	**Emerging Trends in Quality Assurance:** Use of AI and machine learning in quality assurance. -Telemedicine and its impact on quality. -Public-private partnerships in quality healthcare delivery.	4
5.	**Case Studies and Best Practices:** Examples of successful quality initiatives in hospitals. -Lessons learned from quality failures. -Case studies of patient safety incidents and resolutions.	8
Total		**40L**

Course Outcomes:	
After completion of the course, students will be able to:	
1.	Introduce the principles and importance of quality assurance (QA) in the healthcare sector.
2.	Develop practical knowledge on setting up and managing quality management systems (QMS) in hospitals.
3.	Use tools like Six Sigma, Lean, and statistical methods for monitoring and improving hospital processes.
4.	Encourage the habit of staying updated with new developments in healthcare quality standards and technologies.

Learning Resources:	
1.	"Quality Management in Healthcare: Principles and Methods" by Donald Lighter & Douglas C. Fair
2.	"Introduction to Quality Assurance in Healthcare" by Avedis Donabedian
3.	"Healthcare Quality Book: Vision, Strategy, and Tools" by Maulik Joshi, Elizabeth R. Ransom, and David B. Nash
4.	"Hospital and Healthcare Management" by S. L. Goel
5.	Total Quality Management in the Healthcare Industry: An Efficient Guide for Healthcare Management Hardcover – by Balasubramanian Mahadevan

Corresponding NPTEL/SWAYAM Courses:			
Sl. No.	**Course Name**	**Instructor Name**	**Host Institute**
1	Healthcare Quality Management- Infection Control and Patient Safety	Prof. Dhananjay D Mankar	Tata Institute of Social Sciences, Mumbai
	Course Link: https://onlinecourses.nptel.ac.in/noc26_mg02		

Course Name:	**Patient Care and Medical Record Management**		
Course Code:	MBA-HA403	**Category:**	Management Science Course
Semester:	Fourth	**Credit:**	4
L-T-P:	4-0-0	**Pre-Requisites:**	Basic concept of Hospital Management
Full Marks:	100		
Examination Scheme:	Semester Examination:70	Continuous Assessment:25	Attendance:05

Course Objectives:	
1.	Understand the fundamentals of patient care and the essentials of patient experience.
2.	Analyze the role of medical record management in improving healthcare outcomes.
3.	Examine ethical, legal, and regulatory aspects of patient data handling.
4.	Develop managerial skills for handling medical records in healthcare institutions.
5.	Explore technology's role in transforming patient care and medical record management.

Course Contents:

Module No.	**Description of Topic**	**Contact Hrs.**
1.	**Introduction to Patient Care and Medical Record Management:** Patient Care Fundamentals: Definitions, scope, importance in healthcare. Patient-Centered Care Approach: Types of care: Primary, secondary, tertiary, and quaternary care, Components, benefits, and implementation strategies. Principles of patient care in healthcare facilities, Introduction to Medical Records: Types, content, and relevance in healthcare settings. Medical Record Management Systems: Basic concepts, roles, and importance in patient care.	6

2.	**Patient Care Management**: Patient admission procedures: Registration, documentation, and triage, Types of admissions: Emergency, outpatient, inpatient Discharge planning and post-discharge care Challenges in patient admission and discharge, Protocols, patient flow management, and documentation. Quality of Patient Care: Measuring patient satisfaction, service quality metrics, and patient outcomes. Patient Safety and Risk Management: Identifying risks, safety protocols, and incident management. Ethical and Legal Issues in Patient Care: Patient confidentiality, informed consent, and ethical concerns. **Communication in Patient Care:** Importance of effective communication between patients and healthcare providers, Handling difficult patients and conflict resolution, Ensuring informed consent: Principles and procedures, Cultural sensitivity and ethical considerations in patient care, Quality and Safety in Patient Care Patient safety standards and practices (WHO guidelines) Risk management in hospitals (falls, infections, medication errors), Role of patient feedback in quality improvement, Accreditation and certification standards for quality care (NABH, JCI)	10
3.	**Medical Record Keeping and Information Management:** Definition, importance, and objectives of medical records, Types of Medical Records: Inpatient, outpatient, electronic health records (EHR), and personal health records, Paper-based, electronic, hybrid, Structure and components of medical records (e.g., history, progress notes, discharge summaries), Common terminologies in medical records management. Standards and Best Practices in Record Keeping: Legal requirements for maintaining medical records. Ensuring accuracy, consistency, and compliance. Legal and Regulatory Frameworks: Health Insurance Portability and Accountability Act (HIPAA), data privacy laws. Retention period of medical records: National and international guidelines Consequences of improper documentation or data breaches. Medical Records Department (MRD) Management: Role and responsibilities of the MRD in hospitals Organization and workflow of the MRD. Storage, retrieval, and disposal of medical records, Auditing and quality control in medical records	10
4.	**Technology in Patient Care and Record Management**: Electronic Health Record (EHR) Systems: Features, Implementation, advantages, and challenges. Integration of EHR with hospital information systems (HIS). Role of technology in telemedicine and e-health. Emerging trends: Artificial Intelligence (AI) and Data Analytics in Healthcare: Using medical records for predictive analytics, improving patient care, and resource allocation. Patient Data Security and Privacy: Challenges in data protection, cyber security in healthcare settings. Data Management and Documentation Practices: Proper documentation techniques in patient care, Importance of accurate and timely documentation Standardized coding systems: ICD, CPT, SNOMED. Managing medical data during disasters or emergencies	10
5.	**Patient Care Ethics and Patient Rights:** Overview of patient rights (Right to Information, Informed Consent, etc.) Ethical principles in patient care: Autonomy, beneficence, non-maleficence, justice. Role of healthcare providers in upholding patient dignity, Handling grievances and complaints in patient care	4
Total		**40L**

Course Outcomes:	
After completion of the course, students will be able to:	
1.	Understand the Fundamentals of Patient Care
2.	Effectively Manage Patient Care Processes
3.	Comprehend Medical Record Management
4.	Leverage Technology in Patient Care and Record Management
5.	Develop Strategic Perspectives in Patient Care and Record Management

Learning Resources:	
1.	Fundamentals of Healthcare Administration – By Shelley Safian.
2.	Electronic Health Records for Dummies – By Trenor Williams and Anita Samarth.
3.	Patient Safety and Quality: An Evidence-Based Handbook for Nurses – AHRQ

Corresponding NPTEL/SWAYAM Courses:			
Sl. No.	**Course Name**	**Instructor Name**	**Host Institute**
1	Exploring Survey Data on Health Care	Prof. Pratap C. Mohanty	IIT Roorkee
	Course Link: https://onlinecourses.nptel.ac.in/noc22_hs40		

PHARMACEUTICAL MANAGEMENT (MINOR)

Course Name:	**Pharmaceutical Logistics and Supply Chain Management**		
Course Code:	MBA-PM402	**Category:**	Management Science Course
Semester:	Fourth	**Credit:**	4
L-T-P:	4-0-0	**Pre-Requisites:**	Basic knowledge of pharmaceutical science, logistics, and supply chain management
Full Marks:	100		
Examination Scheme:	Semester Examination:70	Continuous Assessment:25	Attendance:05

Course Objectives:	
1.	To enable the students comprehend the idea of a supply chain and the methods and instruments that pharmaceutical companies can employ to improve their supply chains.
2.	To outline and characterise the essential elements of pharmaceutical supply chain.
3.	To enable the students to deal with carrying and forwarding agents and to manage corporate retailing system.
4.	To facilitate the students to develop ability of drug-store management.

Course Contents:		
Module No.	**Description of Topic**	**Contact Hrs.**
1.	**Introduction:** Key Drivers and enablers in Pharmaceutical Supply Chain Management, Supply chain components, SC Strategy, Measures of Supply Chain Performance in pharmaceutical industry.	4
2.	**Pharmaceutical Logistics Management:** Role of logistics in supply chain. Reverse logistics, networks in reverse logistics. Decision options in reverse logistics. Entities in reverse logistics. Small intermediate logistics. Clinical trial logistics.	10
3.	**Warehouse Management:** Considerations while constructing a medical store, designing a medical store, Materials Handling equipment. Store layout planning, Cold Chain Management. Carrying and Forwarding Agents.	4
4.	**Government Medical Logistics System:** Organogram chart, Activities, services of RMSC, TNMSC model, Quality assurance, challenges, sustainability and lesson learnt from the above Model.	4
5.	**SCM Planning**: Demand and supply in a supply chain. Comparison of Online and Store based supply chain Models, Management of inventories in supply chain. Integrated Approach of SCM and Bull Whip effect. Transportation. Network design in supply chain. Role of information technology in supply chain. Integrated commercial planning – definition, process, and outcomes.	12
6.	**Drug Stores Management:** Procurement information, Stock Records, Flow of Stock and Paper Code work, Inspection for Drug receipts, Discrepancy report. Stock control using FIFO basis, Inventory Tracking, Housekeeping, Disposal of Expired or Damaged Stock.	6
Total		**40L**

Course Outcomes:	
After completion of the course, students will be able to:	
1.	Define and explain the components of pharmaceutical logistics and supply chain management.
2.	Explain the dimensions of the pharmaceutical product handing
3.	Apply the knowledge of supply chain planning to operate the distribution network effectively
4.	Monitor and control drug store management process.

Learning Resources:	
1.	Nada R. Sanders, *Supply Chain Management: A Global Perspective*
2.	Hedley Rees, *Supply Chain in the Drug Industry Delivering Patient Value for Pharmaceuticals and Biologics*
3.	Rob Whewell, *Supply Chain in the Pharmaceutical Industry: Strategic Influences and Supply Chain Responses*
4.	Flávia de Sousa Almeida and Marcos Macri Olivera, *Reverse Logistics for Medicines*,

5.	Chuck Munson, *The Supply Chain Management Casebook: Comprehensive Coverage*

Corresponding NPTEL/SWAYAM Courses:			
Sl. No.	**Course Name**	**Instructor Name**	**Host Institute**
1	Logistics & Supply Chain Management	Prof. Vikas Thakur	IIT Kharagpur
	Course Link: https://onlinecourses.nptel.ac.in/noc24_hs128		

Course Name:	**Ethical, Regulatory and Quality Issues in Pharmaceutical Industry**		
Course Code:	MBA-PM403	**Category:**	Management Science Course
Semester:	Fourth	**Credit:**	4
L-T-P:	4-0-0	**Pre-Requisites:**	Basic Concept of Pharmaceutical, Law and Ethics
Full Marks:	100		
Examination Scheme:	Semester Examination:70	Continuous Assessment:25	Attendance:05

Course Objectives:	
1.	To manage and implement the knowledge about the ethical Issues and Intellectual property rights pertaining to pharmaceutical industry.
2.	To emphasize the regulatory framework in developed and underdeveloped countries for drugs and formulary along with the drug approval process.
3.	To elucidate the Quality Control aspect in Pharmaceutical Production
4.	To manage and implement the knowledge about the Patent law and drug regulatory affairs pertaining to pharmaceutical industry.

Course Contents:		
Module No.	**Description of Topic**	**Contact Hrs.**
1.	**Good Laboratory Practice:** Concept, Evolution and Scopes of Quality Control and Quality Assurance, Good Laboratory Practice, Introduction, Scope and Overview of ICH Guidelines QSEM, with Special Emphasis on Q-Series Guidelines, Quality Assurance Unit, Protocol for Conduct of Non-Clinical Testing, Control on Animal House, Report Preparation and Documentation., Clinical Trial	8
2.	**Drug Regulation History:** Drug Regulation in India, Indian Drug Regulatory System, The Drug and Cosmetics Act, Global Environment Regulation, Regional Collaboration for Drug Regulation, Pharmaceutical Marketing Codes, Competition Law in Pharmaceutical Market	6
3.	**Drug Approval:** Process Filing of INDA, NDA & ANDA in USFDA, International Licensing in EU Countries, International Licensing in Asian and other Countries, Active	7

	Pharmaceutical Ingredient (API) Regulatory Process API Regulatory Process in Pharmaceutical Industry.	
4.	**Pharmaceutical Quality Management:** Basics of Quality Management, Pharmaceutical Quality Management-ICH Q10, Knowledge Management, Quality Metrics, Operational Excellence and Quality Management Review, WHO-GMP Requirements, Quality Control & Management: Quality Control Functions, Acceptance Sampling, Statistical Process Control, Application of Control Charts	7
5.	**Industrial Documentation:** Clinical Data Systems, Electronic Submission, File Formats for Electronic Documents, Procedure for Sending Electronic Submission for Archive, ICH M2- eCTD/International Standardization Efforts.	5
6.	**Intellectual Property Right (IPR):** Introduction to Various IPR, Development of IP Law in India, Introduction of IP Law in India, World Intellectual Property Organization (WIPO), Patent Filing in India, Patent Law & Indian Pharmaceutical Industries, Drug Patent Challenges, Regional Collaboration for Drug Regulation, Patent Infringement	7
Total		**40L**

Course Outcomes:	
After completion of the course, students will be able to:	
1.	Understand the IPR related issues in pharmaceutical industry along with the issues related to Drug Approval
2.	Understand and analyse different quality control related issues in pharmaceutical sector
3.	Understand legal and regulatory aspects pertaining to pharmaceutical industry
4.	Understand and examine different ethical issues pertaining to pharmaceutical industry

Learning Resources:	
1.	Dongare, T., GMP in Pharmaceutical Industry - Global cGMP and Regulatory Expectations, Pharma Med Press
2.	Douglas J. Pisano, David Mantees, FDA Regulatory: A Guide for Prescription Drugs, Medical Devices, & Biologics, CRC Press
3.	Guarino, A., R., New Drug Approval Process: Accelerating Global Registrations, Drugs and the Pharmaceutical Sciences
4.	Mann R., Chopade, V.V., Pharmaceutical Regulatory Science, Thakur Publication Pvt. Ltd
5.	Singh, G., Drug Regulatory Affairs, CBS Publication

Corresponding NPTEL/SWAYAM Courses:			
Sl. No.	**Course Name**	**Instructor Name**	**Host Institute**
1	Legal and Regulatory Issues in Biotechnology	Prof. Niharika Sahoo Bhattacharya	IIT Kharagpur
	Course Link: https://onlinecourses.nptel.ac.in/noc21_lw04		
2	Current regulatory requirements for conducting clinical trials in India for investigational new drugs/new drug (Version 3.0)	Dr D. K. Sable, Dr Rubina Bose, Professor Y. K. Gupta, Dr Nandini K. Kumar, Shri Arun Kumar B. Ramteke, Dr Sucheta Banerjee Kurundkar, Dr M. Vishnu V. Rao, Dr Atul Juneja, Dr Tulsi Adhikari, Dr Mohua Maulik	CDSA,THSTI,DBT
	Course Link: https://onlinecourses.nptel.ac.in/noc21_ge14		

MBA 481: GRAND VIVA

GRAND VIVA:

- A Comprehensive Viva-Voce would be conducted for the students to review the knowledge that they have gathered through the two- year course.
- A group of faculty panel members can ask random questions to the students from any part of the curriculum, and they would be reviewed based on it.

Course Name:	**Data Visualization using Business Intelligence Tools Lab**		
Course Code:	MBA-BA 494	**Category:**	Computer Science and Engineering Course
Semester:	Fourth	**Credit:**	1
L-T-P:	0-0-2	**Pre-Requisites:**	Basic concepts of Computer
Full Marks:	100		
Examination Scheme:	Semester Examination: 70	Continuous Assessment: 25	Attendance: 05

Course Objectives:	
1	To enable the students to analyze large commercial datasets using Business Intelligence/Business Analytics tools to generate insights with clear visual presentation
2	To develop the ability to apply the knowledge of BI tools and techniques for providing solutions to an organization's real life problems.

Course Contents: Practical		
Module No.	**Description of Topic (Practical)**	**Contact Hrs.**
1.	Data Preprocessing and Cleaning, Implement data preprocessing techniques to clean and prepare datasets for analysis, Handling missing values, duplicates, and outliers,	2

2.	Implementing Data Warehousing and ETL Process, Extracting data from different sources (CSV, databases, APIs) Data transformation: filtering, merging, aggregating, Loading data into a BI tool for visualization	2
3..	Design an interactive business dashboard for analyzing key performance indicators (KPIs) by using Power BI, Connecting Power BI to different data sources, Creating reports with KPIs, bar charts, line graphs, pie charts etc.	2
4.	Perform EDA using statistical techniques, Python (Pandas, Matplotlib, Seaborn), Summary statistics and visualizing distributions, Identifying trends, correlations, and patterns in data.	2
5	Design an interactive business dashboard for analyzing key performance indicators (KPIs) by using Power BI, Connecting Power BI to different data sources, Creating reports with KPIs, bar charts, line graphs, pie charts etc.	2
6	Advanced Data Visualization and Storytelling with Tableau, Implement advanced visualization techniques in Tableau and present data-driven insights. Generating heat maps, scatter plots, and geographical maps Designing dashboards with dynamic filters and calculated fields, Enhancing storytelling with tooltips, animations, and annotations	2
7.	Google Data Studio for Real-Time Analytics, Develop a real-time reporting system using Google Data Studio. Building automated reports with time-series analysis	2
8.	Sentiment Analysis and Text Visualization, Extracting text data from social media, reviews, or surveys Performing sentiment analysis (positive, neutral, negative classification), NLTK	2
9.	Time Series Forecasting with BI Tools (Power BI/Python)	2
10	Case Study on BI Implementation in Industry	2
Total		**20P**

Course Outcomes:	
After completion of the course, students will be able to:	
1	Apply suitable design principles in the creation of presentations and visualizations
2	Select appropriate data visualization techniques for given particular requirements imposed by the data
3	Present data with visual representations for any kind of target audience, task, and data
4	Create multiple versions of digital visualizations using Excel, R and Tableau.

Learning Resources:	
1	Data Visualization - A Practical Introduction By Kieran Healy
2	Storytelling With Data: A Data Visualization Guide for Business Professionals By Cole Nussbaumer Knaflic

3	Big Data Visualization, By James W Miller
4	High Impact Data Visualization with Power View, Power Map, and Power BI, By Adam Aspin
5	Big Data & Hadoop, By V.K. Jain, Khanna Publishing House
6	Visual Analytics with Tableau 1st Edition by Alexander Loth ,Wiley Publication

Corresponding NPTEL/SWAYAM Courses:			
Sl. No.	**Course Name**	**Instructor Name**	**Host Institute**
1	Business Intelligence & Analytics	Prof. Saji K Mathew	IIT Madras
	Course Link: https://onlinecourses.nptel.ac.in/noc26_cs64		

Course Name:	**Data Analytics using Big Data Lab**		
Course Code:	MBA-BA 492	**Category:**	Computer Science and Engineering Course
Semester:	Fourth	**Credit:**	1
L-T-P:	0-0-2	**Pre-Requisites:**	Should have knowledge of one Programming Language, Practice of SQL (queries and sub queries)
Full Marks:	100		
Examination Scheme:	Semester Examination:70	Continuous Assessment:25	Attendance:05

Course Objectives:	
1.	Understand commonly used terms and techniques related to data analytics that can be used by managers to make better decisions.
2.	Learn foundational concepts of Apache Hadoop and HDFS, MapReduce, and their ecosystems.
3.	Gain practical experience with AWS services & Apache Spark for Big Data processing and analysis.
4.	Develop problem-solving skills to derive insights from Big Data using industry-standard tools.

Course Contents:		
Module No.	**Description of Topic**	**Contact Hrs.**

1	**Introduction to PySpark & SparkSession, Creating a SparkSession, Understanding distributed data processing, Data Transformation** ○ Using .withColumn(), .filter(), .groupBy(), .agg() ○ Joins (inner, left) for combining datasets ○ Handling missing values and duplicates	10
2	**Basic Aggregations and Business KPIs(4P)** ○ Grouping and summarizing data (e.g., sales by region, revenue trends) **Visualization and Insights (6P)** ○ Power BI: Data Sources and Visualizations ○ Building Interactive Dashboards and Reports ○ Generating Business Insights from Big Data Use Cases	10
Total		**20P**

Course Outcomes:	
After completion of the course, students will be able to:	
1	Understand the principles of Big Data and its applications in business analytics
2	Apply the components of Hadoop, HDFS and Map-Reduce
3	Apply Spark Architecture along with PySpark implementation
4	Solve real-world business problems using advanced analytics techniques with Visualization

Learning Resources:	
1	Big Data Black Book, Dreamtech
2	Big Data and Analytics by Subhashini Chellappan Seema Acharya (Author) , Wiley Publications
3	Tom White " Hadoop: The Definitive Guide" Third Edit on, O'reily Media, 2012
4	Mastering Apache Spark by Mike Frampton Packt Publishing, 2015
5	Jisha Mariam Jose Hadoop Practice Guide: SQOOP, PIG, HIVE, HBASE for Beginners,Notion Press
6	Michael Mineli, Michele Chambers, Ambiga Dhiraj, "Big Data, Big Analytics: Emerging Business Intelligence and Analytic Trends for Today's Businesses", Wiley Publications, 2013.

Corresponding NPTEL/SWAYAM Courses:			
Sl. No.	**Course Name**	**Instructor Name**	**Host Institute**
1	Big Data Computing	Prof. Rajiv Misra	IIT Patna
	Course Link: https://nptel.ac.in/courses/106104189		
2	Introduction to Data Analytics	Prof. Nandan Sudarsanam, Prof. Balaraman Ravindran	IIT Madras
	Course Link: https://nptel.ac.in/courses/110106072		

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Course Name:	**Financial Modelling with Excel Lab**		
Course Code:	MBA-FM495	**Category:**	Management Science Course
Semester:	Fourth	**Credit:**	1
L-T-P:	0-0-2	**Pre-Requisites:**	The basic concept of Managerial Finance and excel
Full Marks:	100		
Examination Scheme:	Semester Examination:60	Continuous Assessment:35	Attendance:05

Course Objectives:	
1.	To develop practical skills in using Excel for financial modelling and financial analysis.
2.	To familiarize students with Excel tools, formulas, and data analysis techniques used in financial decision-making
3.	To enable students to prepare and analyze financial statements using Excel.
4.	To train students in financial ratio analysis and industry financial reporting.
5.	To introduce financial modelling concepts such as time value of money, cost of capital, and project evaluation.
6	To develop the ability to perform risk analysis and financial simulations using Excel

Course Contents:

Module No.	Description of Topic	Contact Hrs.
1.	Practice basic Excel tools and shortcuts used in financial modelling	2
2	Excel formatting, formulas and functions, advanced modelling techniques, data filtering and sorting, charts and graphs, table formulas, scenario building, lookups (VLOOKUP, MATCH, OFFSET), pivot tables	4
3.	Preparing financial statements in Excel, analysis of income statement, balance sheet and cash flow statement, financial statement applications	4
4.	Calculation of financial ratios in Excel, performing Du Pont analysis, and preparing a financial analysis report for an industry	4
5.	Excel calculations for time value of money, cost of capital, leverage analysis, project finance modelling and project evaluation	4
6.	Excel-based risk analysis, simulation in project appraisal, valuation modelling and risk assessment	2
Total		**20P**

Course Outcomes:	
After completion of the course, students will be able to:	
1.	Apply basic Excel tools, shortcuts, and formatting techniques in financial modelling.
2.	Use Excel formulas, functions, lookups, pivot tables, and charts for financial data analysis
3.	Prepare and analyze financial statements such as the Income Statement, Balance Sheet, and Cash Flow Statement using Excel.
4.	Perform financial ratio analysis and Du Pont analysis to evaluate the financial performance of an industry.
5.	Develop financial models for time value of money, cost of capital, leverage, and project evaluation
6.	Conduct risk analysis and financial simulations in Excel to support business decision-making.

Learning Resources:	
1.	Financial Modelling by Simon Benninga
2.	Financial Modelling by Paul Pignataro
3.	Alastair Day, Mastering Financial Modeling in Microsoft Excel; Pearson, India Edition
4.	Building Financial Models, John Tjia, McGraw-Hill
5.	Danielle Stein Fairhurst, Using Excel for business analysis, Wiley Finance

Corresponding NPTEL/SWAYAM Courses:			
Sl. No.	**Course Name**	**Instructor Name**	**Host Institute**
1	Financial Statement Analysis and Reporting	Prof. Anil K. Sharma	IIT Roorkee Prof. Anil K. Sharma
	Course Link: https://nptel.ac.in/courses/110107073		

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Course Name:	**HR Analytics Lab**		
Course Code:	MBA-HR495	**Category:**	Management Science Course
Semester:	Fourth	**Credit:**	1
L-T-P:	0-0-2	**Pre-Requisites:**	Basic theoretical knowledge of HR cost-benefit analysis and statistics
Full Marks:	100		
Examination Scheme:	Semester Examination:60	Continuous Assessment:35	Attendance:05

Course Objectives:	
1.	To enable the learners to understand the practical applications of HR analytics
2.	To enable the learners to apply the methodology of quantitative and qualitative aspects of HR analytics.
3.	To enable the learners to apply the statistical tools for analysis of HR data.
4.	To enable the learners to execute the projects based on the practical learning.

Course Contents:

Module No.	Description of Topic	Contact Hrs.
3.	Computation of the total and per-employee cost of employee turnover with a dummy dataset using spreadsheet or statistical analysis platform/software	2
4.	Evaluation of recruitment efficiency (calculation of Time to Fill, Cost per Hire, Selection Ratio, Offer Acceptance Rate) with a dummy dataset using quantitative HR metrics	2
5.	Assessment of the impact of training programs (comparative analysis of pre-test and post-test scores and calculation of training ROI) with a dummy dataset using statistical analysis platform/software.	2
6.	Measurement of employee satisfaction and engagement (survey of a small sample of employees) using statistical analysis platform/software.	2
7.	HR Blog Writing & Sentiment Analysis using spreadsheet or Python as well as Content Analysis of interview data.	4
8.	Prediction of employee performance or attrition using multiple regression as well as modelling latent constructs using PLS-SEM	4
9.	**Project**	4
Total		**20P**

Course Outcomes:	
After completion of the course, students will be able to:	
1.	Apply quantitative HR metrics to measure employee separation cost, recruitment

	effectiveness, training ROI, and employee attitude using appropriate statistical tools
2.	Analyze HR datasets using descriptive and inferential statistical techniques, including correlation, regression, and hypothesis testing, to support data-driven decision-making.
3.	Evaluate qualitative HR data through content analysis and perform sentiment analysis on HR-related textual data using structured coding and analytical frameworks.
4.	Create predictive HR models using advanced analytical techniques such as Multiple Regression and PLS-SEM to interpret workforce behavior and provide managerial recommendations.

Learning Resources:	
1.	Predictive HR Analytics, 3rd Edition**:** *Dr. Martin Edwards, Kirsten Edwards & Daisung Jang* **—** Kogan Page
2.	People Analytics: Data to Decisions: Rahul Ghatak — Springer Singapore
3.	HR Analytics –Practical Approach Using Python: Bharti Motwani - Wiley

Corresponding NPTEL/SWAYAM Courses:

Sl. No.	Course Name	Instructor Name	Host Institute
1	HR Analytics	Prof. Santosh Rangnekar, Prof. Abhishek Singh	IT Roorkee, XLRI Jamshedpur
	Course Link: https://nptel.ac.in/courses/110107492		
2	HR Analytics	Dr. Archana Shrivastava, Dr. Priyanka Mishra	Sri Balaji University, Pune
	Course Link: https://onlinecourses.swayam2.ac.in/e-learning/preview/imb26_mg53		