

SEMESTER III

21GM31 SUMMER INTERNSHIP

0 0 8 4

Course Requirements

- Students will have to undergo a summer internship for minimum eight to ten weeks in a company/firm/research organization at the end of Semester II.
 - All students placed for summer internship through campus placement process are mandated to attend the same and cannot change unless prior permission is taken.
 - Students will be assigned a faculty mentor for the entire period. Stage-wise approval as to the intended company, the start and finish dates and periodic reports has to be confirmed and completion certificates should be obtained and submitted to the mentor.
 - The internship assessment is a multi-stage sequential process.
 - At the end of the internship and in the beginning of the Semester III, students have to submit an internship report and make a presentation in which they will present their work to examiners from the industry and academia for evaluation.
- A detailed guideline and instruction manual will be given to students at the end of Semester II.

21GM32 STRATEGIC MANAGEMENT

0 0 6 3

UNIT 1: Strategic Management Overview

18 Hours

Industrial organization model-Resource based model – Vision – Mission – Competency- Core-competency-Distinctive competency-Fortune at the bottom of the pyramid -- External environmental analysis-Global- Legal and political factors, New business models for the new economy

UNIT 2: Internal Environment, Business Level Strategy

18 Hours

Resources – Capabilities-Criteria of sustainable competitive advantage-Value chain analysis – Outsourcing-Economies of scale-Economies of scope- Cost leadership strategy – Differentiation – Focus – Integration -Flexible manufacturing system- Total quality management

UNIT 3: Corporate Level Strategy

18 Hours

Levels of diversification-Operational relatedness-Corporate relatedness-Vertical Integration-Merger-Acquisition- Joint Venture-Strategic alliance –Restructuring – Downsizing – Downscoping- Leveraged buy out

UNIT 4: Strategic Tools

18 Hours

External factor evaluation matrix-Internal factor evaluation matrix- Competitor profile matrix- SWOT-TOWS- IE matrix-Grand strategy matrix- Boston consultancy group matrix- Quantitative strategic planning matrix(QSPM), Leveraging technology for strategic decision making

UNIT 5: Global Strategy

18 Hours

Porter's determinants of national advantage-International strategies-International corporate level strategies-Choice of International Entry mode- Strategic alliance- Types of strategic alliance-Business level co-operative strategy

Total : 90 Hours

Reference Books

- Hitt, Ireland, Hoskisson and Manikutty, "Strategic Management: A South-Asian Perspective with CourseMate", Cengage Learning, 9th Edition, 2016.
- David Fred and David Forest, "Strategic Management-Concepts and Cases", Pearson Education, 15th Edition, 2015.
- Thompson, Peteraf, Gamble and Strickland, "Crafting & Executing Strategy: Concepts & Cases", McGraw Hill publication, 21st Edition, 2017.
- John A. Pearce II, Richard B. Robinson, and AmitaMital, "Strategic Management (SIE)", McGraw Hill Education, 14th Edition, 2018.
- Thomas L. Wheelen, J. David Hunger, Alan N. Hoffman, Charles E. Bamford, PurvaKansal, "Strategic Management and Business Policy: Globalization, Innovation and Sustainability", Pearson Publication, 15th Edition, 2018.

SEMESTER IV

21GM41 ENTREPRENEURSHIP AND NEW VENTURE CREATION

0 0 4 2

UNIT 1: Entrepreneurship - Overview

12 Hours

The Entrepreneur – concept and nature, entrepreneurial decision process, characteristics, attitude, competencies, and motivation, achievement motivation, skills, knowledge, creativity and innovativeness. The MSME landscape.

UNIT 2:New Venture Creation

12 Hours

Introduction to new venture creation, overview of a lean business model canvas, identifying interested stakeholders, Idea Generation, Initial feasibility analysis.

UNIT 3: The Market and Operational Aspects

12 Hours

Target customer, their problems, demographics, personality traits and behaviour. Market opportunity, market size, growth rate, growth potential, market trends, opportunities, value proposition canvas. Product/service, manufacturing, resources, mode of sales , sales process , go-to-market strategy, concept, prototype, Product Road Map, existing and likely competition, barriers to entry for new

competitors, key distribution and technology partners.

UNIT 4: Revenue Model

12 Hours

Revenue model, Average no of customers per month ,Average payment by a customer ,customer acquisition costs, Total Revenue , Expenditure plan, Financial Plan Template, Projected financial statements

UNIT 5: Financing Options and Preparing The Pitch

12 Hours

Sources of funding for startups, IPR process, Legal aspects relating to the startup , team formation, scalability of the model, social and ethical aspects of the business, Winning negotiations, elevator pitch, exit strategy

Total: 60 Hours

Reference Books

1. Eric Ryes,The Lean Startup: How Constant Innovation Creates Radically Successful Businesses, Penguin UK, 2011.
2. Guy Kawasaki, The Art of the Start 2.0,The Time-Tested, Battle-Hardened Guide for Anyone Starting Anything, Penguin publishers, Edition 2, 2015.
3. Noam Wasserman,The Founder's Dilemmas: Anticipating and Avoiding the Pitfalls That Can Sink a Startup (The Kauffman Foundation Innovation and Entrepreneurship),Princeton University, 2013.

**ELECTIVES
FINANCE ELECTIVES**

21GA01 APPLIED FINANCIAL ECONOMETRICS

3 0 0 3

UNIT 1: Univariate Stationary Time-Series Models

9 Hours

Introduction to Stochastic process, stationary processes, Wold representation theorem, autocovariance functions, autocorrelation and partial autocorrelation, auto regressive and moving average models, condition for stationary and invertible process, Box-Jenkins approach, forecasting.

UNIT 2: Univariate Nonstationary Processes

9 Hours

Nonstationary process, deterministic and stochastic trends, Integrated process and random walk, Random walk with drift, Unit root process, test for unit root, Dicky fuller tests, ARIMA process. Fractional integrated process.

UNIT 3: Modelling Volatility

9 Hours

Volatility – meaning and measurement, Volatility clustering, Econometric models of volatility, ARCH Model, GARCH model and its various extensions, testing for ARCH/GARCH effects.

UNIT 4: Multivariate Stationary

9 Hours

Vector autoregressive models, Granger Causality, impulse response function, Variance Decomposition.

UNIT 5: Multivariate Non-stationary processes:

9 Hours

Introduction to cointegration, testing for cointegration: Single-equation approaches: Eagle Granger method, Johansen test for cointegration, Vector error correction model.

Total: 45 Hours

Reference Books

1. Brooks C, "Introductory Econometrics for Finance", 4th Edition, Cambridge University Press, 2019.
2. Hair.F.J, Rolph E Anderson.R.E, Tatham.R.L, and Black.W.C, "Multivariate Data Analysis", 8th Edition, Pearson, 2018.
3. Tabachnick,B.G and Fidell,L.S, "Using Multivariate Statistics", 7th Edition, Harper and Row, 2019.
4. Terrence C.Mills, "Applied Time series Analysis: A practical Guide to Modelling and Forecasting", Academic Press, Elsevier, 2019.
5. Tsay.S.R and Chen.S.,"Nonlinear Time Series Analysis", Wiley, 2019.

21GA02 BANKING AND FINANCIAL SERVICES

3 0 0 3

UNIT 1: Introduction to banking and non-banking companies

9 Hours

Indian Banking system – commercial banks-types-role-regulations and recent trends. Non-Banking Financial companies- types- RBI guidelines- Performance of BFSI. Trends and progress of financial services industry in India.

UNIT 2: Retail financial services

9 Hours

Deposits – types and their features, Debit card. Lending- personal loan, mortgage loan, Consumer loan, credit card services, investment services and wealth management- insurance, mutual fund,demat, etc., and advisory services

UNIT 3: corporate financial services

9 Hours

Over draft, term loan, Hire-purchase, Leasing, Factoring, Bill discounting, forex services, bank guarantee, custodian services

UNIT 4: Management of Banking and Non-Banking Finance Companies

9 Hours

Capital Adequacy-BaseI Norms, Asset quality -NPA, Liquidity, Management quality, Asset-Liability management, risk management, evaluation of performance.

UNIT 5: Fintech in financial services **9 Hours**
 Online banking, Mobile banking, digital payment, ATM, Core banking, application of AI in financial services, role of Blockchain technology, collaboration of fintech companies and Financial Institutions

Total: 45 Hours

Reference Books

1. Arjunwadkar, P. Y. "Fintech: The Technology Driving Disruption in the Financial Services Industry". (n.p.): Taylor & Francis Group, 2020.
2. Khan. M. Y, "Financial Services", 10th Edition, McGraw-Hill Education, 2020.
3. Padmalatha, S., Justin, P. "Management of Banking and Financial Services", Pearson Education India, 2018.
4. Scardovi, C., "Digital Transformation in Financial Services", Germany: Springer International Publishing, 2017.
5. Sinha. V.C and Varshney. J. C, "Money and Financial Systems", SBPD Publishing House, 2020.

21GA03 EMPIRICAL RESEARCH IN FINANCE

3 0 0 3

UNIT 1: Theories of Financial Management **9 Hours**
 Capital Structure – MM Theory, Trade Off Theory, Signalling Theory, Dividend Theories, Cost of Capital, Valuation – Pecking Order

UNIT 2: Capital Market Theories **9 Hours**
 Market Efficiency Theories, Random Walk Theory, Portfolio Theory, CAPM, Arbitrage Pricing Theory, Multifactor Models

UNIT 3: Option Valuation Models **9 Hours**
 Option and their Valuation, Black Scholes Model and Binomial model

UNIT 4: Theories of International Finance **9 Hours**
 Purchasing Power Parity Theory – International Fisher Theory – Interest Rate Parity Theory

UNIT 5: Theories of Behavioural Finance **9 Hours**
 Forward Rate Agreements – Interest Rate Swaps – Interest Rate Futures- Options – Credit Default Swap – Credit Options – Credit Linked Notes- Total Return Swaps – Credit Derivative Pricing

Total : 45 Hours

Reference Books

1. Donald E. Fischer and Ronald J. Jordan, "Security Analysis and Portfolio Management", Pearson Education, 7th Edition, 2018.
2. Prasanna Chandra, "Financial Management: Theory and Practice", McGraw-Hill, 10th Edition, 2019.
3. Rajiv Srivastava and Anil Misra, "Financial Management" Oxford University Press, 2nd Edition, 2011.
4. Sundaram Janakiraman, "Derivatives and Risk Management", Pearson Education, 1st Edition, 2011.
5. Thummuluri Siddaiah, "International Financial Management: An Analytical Framework", Pearson Education, 2nd Edition, 2010.

21GA04 FINANCIAL ANALYTICS

3 0 0 3

UNIT 1: Data in Finance **9 Hours**
 Financial Analytics – Need - Data in Finance - Sources of Financial Data – Pre-processing of Financial Data - Applicability of Tools (Excel, SPSS, R, Python) for Exploratory Data Analysis

UNIT 2: Simple Predictive Models **9 Hours**
 Simple Predictive Models for Finance – Linear Regression - Ridge Regression – Lasso Regression – Logistic Regression – Linear Discriminant Analysis – Applications in Finance

UNIT 3: Advanced Predictive Tools **9 Hours**
 Advanced Predictive Tools - Naïve Bayes Model - KNN - Neural Networks – Decision Tree- Ensemble Models – Support vector Machines – Applications in Finance

UNIT 4: Time Series Forecasting **9 Hours**
 Time Series Analysis - Stock Price Behaviour – Stationarity - Forecasting Models – Single Exponential Smoothing – Holt's Model – Holt-Winter Model – ARMA, ARIMA, Auto ARIMA - Performance Measures– Volatility Modelling using ARCH and GARCH Models

UNIT 5: Prescriptive Analytics **9 Hours**
 Prescriptive Analytics – Need - Linear Programming – Sensitivity Analysis – Optimization Techniques – Goal Programming

Total: 45 Hours

Reference Books

1. Bart Baesens, "Analytics in a Big Data World – The essential guide to Data Science and its Applications", Wiley Publications, 2018
2. Daniel T. Larose and Chantal D. Larose, Data Mining and Predictive Analytics, (2nd Edition) Wiley, 2018.
3. Dinesh Kumar. U., "Business Analytics", Wiley Publications, 1st Edition, 2017.
4. Galit Shmueli, Peter C Bruce, Nitin R Patel, "Data Mining for Business Analytics – Concepts, Techniques and Applications", Wiley Publications, 2016.
5. James Evans, "Business Analytics", (2nd Edition) Pearson Publications, 2018.

21GA05 FINANCIAL DERIVATIVES

3 0 0 3

UNIT 1: Forwards and Futures

9 Hours

Introduction to Derivatives – Need – Types - Forwards – Futures – Specifications – Open Interest – Pricing Futures – Arbitrage Argument – Marking to Market – Convergence – Basis and Basis Risk – Hedge Ratio -Trading strategies

UNIT 2: Options

9 Hours

Options – Types of Options – Specifications – Option Positions – Option Premium - Moneyness - Margin Requirements - Pay off – Put call Parity – Factors affecting option prices – Exotic Options

UNIT 3: Option Trading Strategies

9 Hours

Covered Call – Protective Put – Strangle – Straddle – Bull and Bear Call spread – Call Back Spread - Bull and Bear Put Spread – Condor – Butterfly – Collar

UNIT 4: Option Pricing

9 Hours

Binomial Option Pricing – Risk neutral valuation - Single period and Multi period – Implied Volatility - Black Scholes Model - Options Greeks – Delta Hedging – Volatility Smiles

UNIT 5: SWAPS

9 Hours

Introduction – SWAP Facilitators – Interest Rate Swaps – Currency Swaps –Comparative Advantage using Swaps - Credit Default Swaps – Forward Rate Agreements – Total Return Swaps

Total: 45 Hours

Reference Books

1. John C. Hull, "Fundamentals of Futures and Options Markets", Pearson, 9th Edition, 2018.
2. John C. Hull, SankarshanBasu, "Options Futures and Other Derivatives", Pearson, 9th Edition, 2018.
3. Parasuraman N R, "Fundamentals of Financial Derivatives", Wiley, 3rd Edition, 2014.
4. Robert L McDonald, "Derivatives Markets", Pearson, 3rd Edition, 2014.
5. Srivatsava and Rajiv, "Derivatives and risk Management", Oxford University Press, 2nd Edition, 2014.

21GA06 FINANCIAL RISK MANAGEMENT

3 0 0 3

UNIT 1: Introduction to Risk Management

9 Hours

Risk, Types of Risk, Objective of Risk Management, Sources of Risk, Measurement of Risk

UNIT 2: Identifying and Quantifying Financial Risk

9 Hours

Risk Identification and Assessment, Risk Response, Risk Control Implementation, Risk Exposure. Quantifying Tools – Regression Analysis, Value at Risk and Scenario Analysis

UNIT 3: Risk Aversion & Management Technique

9 Hours

Risk Avoidance, Loss Control, Risk Retention, Risk Transfer, Value of Risk Management, Pooling and Diversification of Risk

UNIT 4: Introduction to Insurance

9 Hours

General Insurance, Principles of General Insurance, General Insurance Products (Fire, Motor, Health), Directors and Officers Liability Insurance, Insurance Contracts, Objective of Insurance, Elements of valid contract, Characteristics of Insurance contracts, Insurance Pricing, Insurance Market & Regulation, Solvency Regulation.

UNIT 5: Insurance as a Risk Management Technique

9 Hours

Insurance Principles, Policies, Insurance cost & Fair Pricing, Expected claim costs, Contractual provisions that limit Insurance coverage, Reinsurance.

Total: 45 Hours

Reference Books

1. Garcia.F.J.P, "Financial Risk Management: Identification, Measurement and Management", Springer, 2018.
2. Hull, J. C. "Risk Management and Financial Institutions", United Kingdom: Wiley, 2018
3. McNamara, Michael J, Rejda, George E. "Principles of Risk Management and Insurance", United States: Pearson Education, 2020.
4. Roncalli,T. "Handbook of Financial Risk Management", CRC Press, 2020.
5. Schenke.J, "Financial Risk Management Fundamentals", United States: Amazon Digital Services LLC - KDP Print US, 2019.

21GA07 FIXED INCOME SECURITIES

3 0 0 3

UNIT 1: Introduction to Debt Instruments

9 Hours

Basic Concepts of Debt Instruments - Indian Debt Market – Central Government Securities – State Government Bonds – Call Money Market – Corporate Bonds – Commercial Paper – Certificate of Deposit - Repo – Bond Market Indices

UNIT 2: Bond Valuation

9 Hours

Bond Valuation – Accrued Interest – Yield – Weighted Yield – YTM of a Fixed Income Portfolio – Realized yield – Yield Price Relationship of Bonds. Valuation of bonds as per SEBI norms.

UNIT 3: Term Structure of Interest Rates**9 Hours**

Yield Curve – Bootstrapping - Definitions and Properties of Term structure – Theories of Term structure – Pure expectation theory- The pure risk premium theory- The market segmentation theory – The biased expectation theory

UNIT 4: Duration**9 Hours**

Introduction and Definition – Calculating the Duration of a Coupon Paying Bond – Computing Duration on Dates other than Coupon Dates – Modified Duration – Rupee Duration – Price value of a Basis Point – Portfolio Duration – Limitations

UNIT 5: Hedging Interest Rate Risk and Credit Risk**9 Hours**

Forward Rate Agreements – Interest Rate Swaps – Interest Rate Futures- Options – Credit Default Swap – Credit Options – Credit Linked Notes- Total Return Swaps – Credit Derivative Pricing

Total: 45 Hours**Reference Books**

1. Barbara S. Petitt, Jerald E. Pinto, Wendy L. Pirie, Bob Kopprasch, "Fixed Income Analysis", Wiley, 3rd Edition, 2015.
2. Bruce Tuckman, "Fixed Income Securities: Tools for Today's Markets", Wiley Finance, 3rd Edition, 2011.
3. Frank J. Fabozzi and Steven V. Mann, "The Handbook of Fixed Income Securities", Tata Mcgraw Hill, 8th Edition, 2017.
4. Mukherjee, K. N., "Demystifying Fixed Income Analytics: A Practical Guide", United Kingdom: Taylor & Francis Group, 2020.
5. Parameswaran, S. K., "Fixed Income Securities: Concepts and Applications", Germany: De Gruyter, 2019.
6. PietroVeronesi, "Fixed Income Securities: Valuation, Risk and Risk Management", Wiley, 1st Edition, 2010.

21GA08 INTERNATIONAL FINANCIAL MANAGEMENT**3 0 0 3****UNIT 1: Foreign Exchange****9 Hours**

Foreign Exchange Market - Rates and Quotations - Spot Rate - Forward Rate - Bid Ask Spread - Arbitrage in Foreign Exchange Markets

UNIT 2: International Flow of Funds**9 Hours**

Key Components of Balance of Payments – International Trade Activity – International Trade Flows influenced by Economic Factors – International Capital Flows - Participants - Types - Direct and Indirect (FDI, FII, ECB's, FEMA and Others) - Networks for International Transaction

UNIT 3: Exchange Rate Theories**9 Hours**

Theories of Exchange Rate Determination and Problems (Interest Rate Parity Theory, Purchase Power Parity Theory, Fisher Effect) – Comparison of IRP, PPP and FE - SWAP Transaction

UNIT 4: Foreign Exchange Exposure**9 Hours**

Foreign Exchange Risk -Types of Exposure - Techniques for Managing Exposure Related Risks

UNIT 5: International Financing**9 Hours**

International Financing – Short Term and Long-Term Financing – Instruments – Features – Evaluation and Selection

Total: 45 Hours**Reference Books**

1. Alan C. Shapiro, Peter Moles, "International Financial Management", Wiley Publications, 2016.
2. CheolEun and Bruce Resnick, "International Financial Management", McGraw Hill, 8th Edition, 2018.
3. David K Eiteman, Arthur I Stonehill, Michael H Moffett, "Multinational Business Finance", Pearson Education, 13th Edition, 2012.
4. P G Apte, SanjeevanKapshe, "International Financial Management", McGraw Hill, 2020.
5. Prakash G Apte, "International Finance", Mcgraw Hill, 2nd Edition, 2010.

21GA09**INVESTMENT AND PORTFOLIO MANAGEMENT****3 0 0 3****UNIT 1: Investment Alternatives and Mechanics of trading****9 Hours**

Nature and scope of Investments – Different avenues of Investments - Risk Vs Return; Stock Exchanges – Organization and Functions - Listing of Securities – Mechanics of Trading – Online Trading – SEBI Regulations related to stock exchanges

UNIT 2: Fundamental Analysis**9 Hours**

Fundamental Analysis – Economic, Industry, Company – EMH - Forms of EMH – Tests – Implications for Investment Policies – Dow theory

UNIT 3: Technical Analysis**9 Hours**

Candle Sticks – Chart Patterns and Gap Theory - Oscillators – MACD, RSI, ROC, Bollinger Band, ADX and Alligator

UNIT 4: Portfolio Theory & Analysis**9 Hours**

Markowitz Portfolio Theory, Sharpe Single Index Model, CAPM & APT. Portfolio - Risk and Return

UNIT 5: Portfolio Management**9 Hours**

Portfolio Process – Portfolio Objective and policy – Portfolio Selection – Implementation and Monitoring – Evaluation and Revision

Total : 45 Hours

Reference Books

1. Bhalla, "Investment Management, Sultan Chand Publishing", 19th Edition, 2008
2. Donald E.Fischer and Ronald J.Jordan, "Security Analysis and Portfolio Management", Pearson Education, 7th Edition, 2019.
3. Kevin. S, "Security Analysis and Portfolio Management", PHI, 2nd Edition, 2015.
4. Prasanna Chandra, "Investment Analysis and Portfolio Management", Tata McGraw Hill, 5th Edition, 2017.
5. Reiley& Brown, "Investment analysis and Portfolio Management", Cengage Learning, 11th Edition, 2019.

21GA10 INVESTMENT BANKING

3 0 0 3

UNIT 1: Investment Banking Paradigm

9 Hours

Introduction to Financial concepts and instruments- Investment banking - Global/Indian Investment Banking Industry Scenario - Activities – Investment banking Vs Merchant banking – Functions

UNIT 2: Issue Management

9 Hours

Guidelines for Issues Management – IPO - Offer documents - Management of capital issues –Pre issue activities - Post issue activities - Underwriting and Brokerage - Registrar and Share transfer Agents - Pricing and Marketing of public issues - Listing Guidelines

UNIT 3: Disinvestment and Corporate restructuring

9 Hours

Disinvestment mechanisms - Buy backs – Mergers – Acquisitions - Delisting - Methods – Procedures – Problems, Leveraged buy-outs, NCLT

UNIT 4: International Financial Instruments

9 Hours

International Financial instruments – Crowd Funding - Debt / Equity – ADR – GDR – ECBs - FCCBs – PN -NIFs – MTNs - Raising of offshore Finance – Sources - Advantages – Risk – Legal aspects & Modalities.

UNIT 5: Regulations and Ethics

9 Hours

Regulatory framework of Investment Banking, Stock Exchanges & Share Brokers - Recent Developments. Legal, ethical and governance issues in investment banking

Total : 45 Hours

Reference Books

1. David P.Stowell, "Investment Banks, Hedge Funds and Private Equity", Elsevier, 3rd Edition, 2017.
2. JoshuaRosenbaum and Joshua Pearl, "Investment Banking: Valuation, LBOs, M&A, and IPOs", Wiley, 3rdedition, 2020.
3. K.ThomasLiaw, "The Business of Investment Banking: A Comprehensive Overview", John Wiley and Sons, 3rd Edition, 2011.
4. Mathew Kranz and Robert R.Johnson, "Investment Banking for Dummies", John Wiley and Sons. 2nd Edition, 2020.
5. Michel Fleuriet, "Investment Banking Explained: An insider's guide to the Industry", McGraw Hill, 2nd Edition, 2019.
6. PradapGiri.S, "Investment Banking, concepts, Analyses and Cases", McGraw Hill India, 3rd Edition, 2017.

21GA11 PROJECT APPRAISAL AND FINANCE

3 0 0 3

UNIT 1: Project Financing

9 Hours

Project financing- Concept and Meaning – Unique characteristics – Requirements – Rationale for project financing - Softwares for Project Management

UNIT 2: Sources of Project Financing

9 Hours

Means of project financing – Sponsors' –lenders' and other stakeholder perspective – project financing structures - Project cash flow determination and financing options – fund vs non-fund financing – formulating financing mix – Features of debt structure – Debt service covenants

UNIT 3: Project Feasibility Analysis

9 Hours

Project viability and evaluation – Essentials of cost estimation forecasting - Measures used by investors – NPV- IRR- Payback – XIRR- MIRR- Economic IRR- Decision tree analysis – scenario and sensitivity analysis - Evaluating Projects with constraints

UNIT 4: Risk Analysis

9 Hours

Project Viability – Measures used by lenders- Leverage – Debt Service – Loan Life – Project life cover ratios–preparing the project financing plan- lender's appraisal; Risk Mitigation in projects – Common risks in projects – Risk mitigation methodologies – financial closure risk – securitisation as a tool for risk mitigation

UNIT 5: Real Option Valuation

9 Hours

Real option evaluation of projects – concept and application – Techniques - Simple option valuation – option to expand, contract, abandon – Case studies.

Total: 45 Hours

Reference Books

1. Chandra, Prasanna, "Projects", 9th Edition, McGraw Hill Education, 2019.
2. Finnerty, John, "Project Financing: Asset Based Financial Engineering", 3rd Edition, Wiley and Sons Inc., 2013.
3. Mun, Jonathan, "Applied Analytical Project Management", Liper Press, 2020.
4. Srivastava Vikam and Rajaram V, "Project and Infrastructure Finance: Corporate Banking Perspective", Oxford University Press, 2017.
5. Stefano, Gatti, "Project Finance in Theory and Practice", 3rd Edition, Elsevier, 2018.

21GA12 VENTURE CAPITAL AND PRIVATE EQUITY**3 0 0 3****UNIT 1: Introduction to Venture capital and private equity****9 Hours**

Venture capital, Angel financiers, Private Equity, Hedge funds, their classification and different characteristics. History of Venture capital, Angel financiers, Private Equity in India. Different models of VC and Private equity

UNIT 2: Working procedures**9 Hours**

The Venture capital cycle, Opportunity recognition, Key parties involved, value of opportunity, negotiation on terms, harvest or exit in investment.

Initial screening, due diligence, risk return fit, Return on investment from cash flows, breakeven point

UNIT 3: Valuation of companies**9 Hours**

Understanding the nature of business, Methods of valuation and its role throughout the venture capital process. Valuing companies with options: Real options. Difference in approach and evaluation process of PE, angel financier, Venture capitalist with Banks and financial institutions.

UNIT 4: Deal structuring and Exit**9 Hours**

Intention, Security type, Liquidation preferences, Shareholder agreement, Share purchase agreement. Going public: Need for going public, IPO process, role of banker, regulation and cost. Selling the venture: Mergers and acquisitions, Buyback of shares.

UNIT 5: Performance and Regulatory framework**9 Hours**

Performance of venture capital: sector wise and year wise. SEBI regulations, Ethics and code of conducts for venture capitalists and private equity

Total: 45 Hours**Reference Books**

1. Chandra, P., "Corporate Valuation", 2nd Edition McGraw Hill, 2020.
2. Invest, L. "Private Equity: Minority Investments and Buyouts, A Guide to Working with Private Equity", 2nd Edition, Amazon Digital Services LLC - KDP Print US, 2019.
3. Kumar, R. and Sharma, M., "Venture Capital Investments", Sage Publications, 2010.
4. Ramsinghani, M., "The Business of Venture Capital", 3rd Edition, Wiley, 2021.
5. Zeisberger, C., "Mastering Private Equity", Wiley, 2017.

HUMAN RESOURCE ELECTIVES**21GB01 BEHAVIOUR FOR MANAGERIAL EFFECTIVENESS****3 0 0 3****UNIT 1: Behavioural Basics****9 Hours**

Behaviour – Manager - effectiveness, Positive behaviour for managers - Influence of behaviour for effectiveness - Managerial job dimensions, Managerial Competencies, Time dimensions in managerial jobs, Effective and Ineffective job Behaviour.

UNIT 2: Assessing Behaviours**9 Hours**

Analyzing behaviour, assessing behaviour, Luthans & Kreitner Model, Perception: Linkage between perception and organizational outcomes, Linking perception and attribution to decision and behaviour, perceptual influence to have productive behaviour, Impression Management.

UNIT 3: Managing Interpersonal Behaviour**9 Hours**

Functional and Dysfunctional job behaviour, influencing behaviour of subordinates, Understanding the forbidden behaviour of managers, Empowering subordinates, Identifying managerial talent among subordinates, Effective management criteria, Post performance Feedback.

UNIT 4: Team Handling Behaviour**9 Hours**

Retention, Employee engagement, Managing ethical issues dealing with team, behaviour for handling conflicts, Negotiation skills, Job challenges for team, Role of organizational design in supporting effective teams, Creating structures to support effective behaviour.

UNIT 5: Managerial Behaviour for Organizational Efficiency and Self Enhancement**9 Hours**

Self-directed learning, Self-Development - Knowledge Management - Culture for organizational creativity, Creativity Techniques.

TOTAL: 45 Hours

Reference Books

1. Aswathappa, K. "Human Resource Management: Text & Cases", 8th Edition, Tata McGraw Hill Education Private Limited, 2017.
2. Chandan, J. S., "Organizational Behaviour", Vikas Publishing, 2011.
3. Greenberg, J. "Managing Behaviour in Organizations", Pearson/Prentice Hall, 2010.
4. Hersey, P., Blanchard, K. H., & Johnson, D. E., "Management of Organizational Behaviour: Leading Human Resources", Pearson, 2013.
5. Parikh, M., & Gupta, R., "Organizational Behaviour", Tata McGraw Hill Education Private Limited, 2010.

21GB02 COMPENSATION AND BENEFITS MANAGEMENT**3 0 0 3**

UNIT 1: Compensation Management	9 Hours
Compensation –Meaning, Objectives of Compensation, Compensation and Non-compensation Dimensions, Compensation System Design Issues, Compensation Approaches. Strategic Issues and Internal Alignment.	
UNIT 2: Job Evaluation	6 Hours
Compensation Strategy at Micro Level, Concept of Equity, Job Evaluation - Methods of job evaluation, Process of Job Evaluation, Problems Involved in Job Evaluation.	
UNIT 3: Wages and Salary Administration	12 Hours
Concept of wage, Code on Wages - Fixing minimum wage, Payment of Wage and Bonus; Compensation Benchmarking , Concept of Salary Structure, Methods of Payment - Factors Affecting Pay Levels. Designing Pay Structures, Different Types of Pay Structures, Designing Pay Ranges and Bands. Income tax act and its impact on salary structure, Deductions and allowances - Executive Compensation, Competency based Compensation, Skill-based Pay and Pay Banding - International Remuneration - Expatriate Compensation	
UNIT 4: Incentive Schemes	9 Hours
Variable Pay-Types of Incentive Schemes, Wage Incentive Plans, Pay for Performance Plans. Profit Sharing and Co-Partnership. Employee Stock Ownership Plans (ESOP). Team-based Pay.	
UNIT 5: Fringe Benefits And Pension Plans	9 Hours
Classification of Employee Benefits, Long term Incentive plans, Strategic Perspectives on Benefits, Designing a Benefit Package. Security Benefits to Employees. Introduction to Fringe Benefits, Coverage of Benefits, Fringe Benefits in India. Voluntary Benefits: Retirement, Pension and Super Annuation plan.	
Total:	45 Hours

Reference Books

1. Armstrong, M., "Armstrong's Handbook of Reward Management Practice: Improving Performance Through Reward" 6th Edition, Kogan Page Publishers, 2019.
2. Berger, L., & Berger, D., "The Compensation Handbook - A state-of-the-Art-Guide to Compensation Strategy and Design", 6th Edition, McGraw Hill, 2015.
3. Milkovich, G. T., Newman, J., & Venkataratnam, "Compensation", Special Indian Edition, McGraw Hill, 2017.
4. Newman, M., Gerhart, B., & Milkovich, G. T., "Compensation", 12th Edition, McGraw Hill, 12th Edition, 2020.
5. Sharma, R. C., & Sharma, S., "Compensation Management", 1st Edition, Sage Publications, 2019.

21GB03 CONFLICT MANAGEMENT**3 0 0 3**

UNIT 1: Introduction to Conflict	10 Hours
Understanding Conflict – Different Schools of Thought, Components of Conflict, Perspectives and Types of Conflict, Levels of Conflict – Intra-personal, Interpersonal and Group/Team	
UNIT 2: Sources of Conflict	7 Hours
Cognitive Dissonance, Neurotic Tendencies, Relationship Rules, Personality, Gender and Age Related Issues, Cross-Cultural Issues, Role Incompatibility, Stress, Difficult Bosses and Colleagues, Other Sources of Group and Organizational Conflict	
UNIT 3: Approaches to Managing Conflict	9 Hours
Thomas Kilmann Approach to Conflict Resolution, Behavioural Style and Conflict Handling, Cosier Schank Model of Conflict Resolution, Dealing with Difficult Bosses, Colleagues and Subordinates, Strategies to Resolve Team Conflicts	
UNIT 4: Skills for Managing Conflict	9 Hours
Effective Listening and Dialogue Skills, Creativity and Change in Conflict Management, Conflict Prevention and Early Resolution, Evaluating Cost of Workplace Conflict, Understanding Impact of Constructive Conflict	
UNIT 5: Negotiation and Mediation	10 Hours
Introduction to Negotiation, Types of Negotiation, Dimensions of Negotiation, Negotiation Steps, Negotiation Tricks and Traps, Value Creation in Negotiation, Mediation, Responsibilities of Mediator, Types of Mediation, Why Negotiations and/or Mediations Fail?	
Total:	45 Hours

Reference Books

1. Fahed-Sreih, J. "Conflict in Family Businesses: Conflict, Models, and Practices", 1st Edition, Palgrave Macmillan, 2018.
2. Gallo, A. "HBR Guide to Dealing with Conflict", Harvard Business Review, 2017.
3. Hakim, A. K. "Working with Difficult People: Handling the Ten Types of Problem People Without Losing Your Mind", Penguin, 2017.
4. Proksch, S. Conflict Management, 1st Edition, Springer, 2016.
5. Raines, S. S., "Conflict Management for Managers: Resolving Workplace, Client, and Policy Disputes" 2nd Edition, Rowman & Littlefield Publishers, 2019.

21GB04 LABOUR LEGISLATION AND INDUSTRIAL RELATIONS**3 0 0 3****UNIT 1: The Occupational Safety- Health and Working Conditions Code 2020****9 Hours**

Applicability- Authorities- One Establishment - One Registration- Duties And Rights Of Employer And Employee -Working Conditions And Welfare Facilities- Working Hours- Leaves- Special Provisions Relating To Employment Of Women- Special Provisions Relating To Contract Labour- Special Provisions Relating To Factories- Special Provisions Relating To Inter-State Migrant Workers- Offences And Penalties- Social Security Fund.

UNIT 2: The Code on Wages 2019**8 Hours**

Key Definitions .Prohibition of Discrimination on the Ground of Gender. Minimum Wages. Payment of Wages .Payment of Bonus .Central Advisory Board and State Advisory Boards. Payment of Dues- Claims and Audit .Appointment of Inspector-cum-Facilitators and their Powers.Offences and Penalties. Miscellaneous Provisions

UNIT 3: The Code on Social Security 2020**8 Hours**

General Features - Employees' Provident Fund -Employees' State Insurance Corporation Gratuity- Maternity Benefit- Social Security And Cess In Respect Of Building And Other Construction Workers- Unorganized Workers- Gig Workers And Platform Workers- Employment Information And Monitoring

UNIT 4: Industrial Relations Code 2020**10 Hours**

Registration of Trade Union- Cancellation of Trade Union. Alteration of Name of Trade Union;
Formation of Work Committee. Incorporation of a Registered Trade Union. Recognition of Negotiating Union. Preparation of Standing Order. Register of Standing Order. Constitution of Industrial Tribunal. Illegal Strikes and Lock-outs. Procedure for Retrenchment and Re-employment of Retrenched Worker Compensation to Workers in case of Transfer of Establishment .Prohibition of Lay-off. Closure of an Industrial Establishment

UNIT 5: Other Relevant Acts and Processes**10 Hours**

The Shop and Establishment Act 1947- The Sexual Harassment of Women at Workplace (Prevention- Prohibition and Redressal Act) 2013, Alternate Dispute Redressal , Disciplinary processes and best practices.

Total: 45 Hours

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Reference Books

1. ICSI, "Handbook on The Code on Wages", ICSI, New Delhi, 2019.
2. Ramesh, C., "The Code on Social Security 2020", Notion Press, New Delhi, 2020.
3. Taxmann, "Taxmann's New Labour & Industrial Laws", Taxmann, New Delhi, 2020.

21GB05 LEADING ORGANIZATIONAL CHANGE AND DEVELOPMENT**3 0 0 3**

UNIT 1: Organizations and their Changing Environments	10 Hours
The historical context for change, Environmental pressures for change, Internal organizational change drives. Types of organizational change, Organization renewal systems approach, sociotechnical system and future shock.	
UNIT 2: Change: A Diagnostic Approach	10 Hours
The Six-Box organizational model, the 7-S framework. The star model, organizational strategy and change, the cultural web, organizational structure and change. Diagnosing readiness for change, Red flags in diagnosis.	
UNIT 3: The Leadership of Change	7 Hours
Management and leadership, theories of change leadership, change leader or change managers, change roles, leadership style and change, dealing with Resistance to change.	
UNIT 4: Change Management Process and Contingency Approaches	8 Hours
Approaches to managing change, transformation failure, DICE and ADKAR model, stage model, process perspectives on change, Contingency approaches to change management.	
UNIT 5: Alternative Approaches to Managing Change	10 Hours
Organizational development, engaging in large scale change, Appreciative enquiry, positive organizational scholarship, dialogic organizational development, managing change from a sense making perspective.	
Total:	45 Hours

Reference Books

1. Barbara Senior, B., Swailes, S., & Carnall, C., "Organizational Change", 6th Edition, Pearson, 2020.
2. Brown, R. D., "An experiential approach to Organizational Development", 8th Edition, Pearson Education, 2014.
3. Cheung-Judge, M., & Holbeche, L., "Organization Development: A Practitioner's Guide for OD and HR", 2nd Edition, Kogan Page, 2015.
4. Cummings, T. G., & Worley, C. G., "Organizational Development and Change", 10th Edition, Cengage, 2015.
5. Palmer, I., Dunford, R., & Buchanan, "Managing Organizational change: A Multiple Perspectives Approach", 3rd Edition, McGraw Hill, 2017.

21GB06 LEARNING AND DEVELOPMENT

3 0 0 3

UNIT 1: Learning Styles and Strategies

9 Hours

Learning principles – Learning strategies and styles – Kolb's Learning Styles- Bloom's Taxonomy- Individual differences in the Learning process. Maximizing learning –Recent developments in Instructional and cognitive psychology. Model of employee behaviour–External influences –Internal factors that influence employer behaviour.

UNIT 2: Role Analysis and Training Need Analysis

9 Hours

Role Analysis: Developing the person in the role, RAT (Role Analysis Technique). Role of T & D in organization – Training Process model- Identification of Training Needs: Organizational analysis – Task Analysis – Person analysis – Prioritizing HRD needs – identifying individual's developmental needs.

UNIT 3: Designing Training and Development

9 Hours

Principles of training design –defining the objectives – make / buy Decision – selecting the trainers – preparing lesson plan, training methods, materials – scheduling

UNIT 4: Implementing T & D Programs

9 Hours

Training delivery methods, principles involved in selection of various methods – Techniques of training at different levels – Skills of an effective trainer – e learning and use of technology in training

UNIT 5: Evaluation and Transfer of Training

9 Hours

Training Evaluation: Purpose – methods and techniques (models of evaluation) - Transfer of training – issues – transfer process – theories – strategies – Organization and work environmental factors that influence transfer of training – Avoiding common evaluation pitfalls.

Total: 45 Hours

Reference Books

1. Beevers, K., Rea, A., & Hayden D, "Learning and Development Practice in the Workplace", Kogan Page, 2019.
2. De Simone R, L., & Werner, J, M, "Human Resource Development", 6th Edition, Cengage learning, 2016.
3. Ford, J K, "Learning in Organizations- An Evidence-Based Approach", Taylor & Francis, 2020.
4. Noe, R, "Employee Training & Development", 8th Edition, McGraw Hill, 2020.
5. Ross, S C, "Training and Development in Organizations - An Essential Guide for Trainers", Taylor & Francis, 2018.

21GB07 MANAGING GLOBAL WORKFORCE

3 0 0 3

UNIT 1: Introduction to IHRM and Cross Culture Management

10 Hours

Overview of International Human Resources management, External & Internal forces influencing global workforce management, changes & challenges in global labour market, culture, models of culture and impact of culture in various business contexts such as mergers and acquisitions.

UNIT 2: Sourcing Human Resources for Global Markets

10 Hours

Competitive strategies for Multinational corporations, linking human resources management to competitive strategy and organization structure. The role of HR planning in carrying out MNC strategy for both short and long term. International work arrangement, key factors affecting global staffing.

UNIT 3: International Training, Development & Careers

10 Hours

Role of training in on - assignment performance. Components of pre-departure training, effectiveness and trends in international training & developing Repatriation, factors affecting re-entry, Designing a repatriation program.

UNIT 4: Global Performance Management and Compensation

10 Hours

Performance Management process, Considerations for global performance management, planning and implementing global performance appraisal, Managing compensation on a global scale. Key compensation considerations for expatriates, HCN's & TCN's.

UNIT 5: International Industrial Relations

5 Hours

Issues in international industrial relating and the policies & practices of MNE's, strategies adopted by trade unions when dealing with MNE's. Recent trends and uses in the global work force context.

Total: 45 Hours

Reference Books

1. Dreasher, L, "Mastering Cultural Differences: Strategies for Leading a Global Workforce", 1st Edition, Indie Books Intl, USA, 2021.
2. Aswathappa, K., & Dash, S, "International Human Resource Management", 3rd Edition, McGraw Hill India, 2020.
3. Edwards, T., & Rees, C. "International Human Resource Management", 3rd Edition, Pearson Education, London, 2017.
4. Dowling, P. J., Festing, M., & Engle A. D. Sr, "International Human Resource Management", 7th Edition, Cengage, India, 2017.
5. Vance, C. M., & Paik, Y., "Managing a Global Workforce", 3rd Edition, Routledge, London, 2014.

21GB08 PEOPLE ANALYTICS**3 0 0 3****UNIT 1: Introduction to HR Metrics and Excel Charting****11 Hours**

Evolution and timeline of HR Analytics - Types of Analytics - HR Analytics Applications - Summarizing & Reporting HR Data using Business Intelligence tools (Importing Data, What-if Scenarios, Pivot Tables, Representation through Funnel Chart, Bullet Chart, Pyramid, Thermometer Chart, Dynamic Charts etc.)

UNIT 2: Recruitment and Diversity Analytics**9 Hours**

Social Media for Recruitment and Employer Branding, Diversity Index, Offer Reject and Renege (Logistic Regression), Attrition (Random Forest Algorithm), Channel Efficiency, Recruitment Metrics

UNIT 3: Training and Development & Workforce Deployment Analytics**8 Hours**

Training Outcome Analysis, Training hours and cost metrics, ROI calculation, Employee Profiling, Turnover Index, Natural Language Processing in HR Analytics – Uncovering employee insights

UNIT 4: Talent Retention and Career Progression Analytics**8 Hours**

Retention Index, Voluntary and involuntary Turnover, Career Path Index, Succession Readiness index, Employee Satisfaction and Engagement Surveys, Gamification for Employee Engagement

UNIT 5: HR Audits And Visualisation of HR Data**9 Hours**

HR Audit Process, Recruitment and Selection Process Audit, Statutory Compliance Audit, Benchmarking, Design Thinking Principles for Dashboards, KPI Dashboard, KPI Scorecard, HR Balanced Scorecard

Total: 45 Hours**Reference Books**

1. Acharya, S. "Data Analytics Using R", McGraw Hill Education, 2018.
2. Bhattacharyya, D. K., "HR Analytics: Understanding Theories and Applications", 1st Edition, Sage Publications India Pvt Ltd, 2017.
3. Edwards, M., & Edwards, K, "Predictive HR Analytics: Mastering the HR Metric", 2nd Edition, Kogan Page, 2019.
4. Lander, J. P, "R for Everyone", 2nd Edition, Pearson India Education Services, 2018.
5. Shen Ng, M, "Predictive HR Analytics, Text Mining & Organizational Network Analysis with Excel" Independently Published, 2019.

21GB09 PERFORMANCE MANAGEMENT**3 0 0 3****UNIT 1: Introduction to Performance Management****7 Hours**

Defining Performance – Meaning of Performance Management – Historical Developments - Aims and Role of Performance Management – Contribution of Performance Management – Characteristics of an Ideal Performance Management System – Dangers of Poorly Implemented PMS – Integrating PM with other HR and Developmental Activities

UNIT 2: Measurement and PM Cycle**10 Hours**

Performance Management Process - Approaches to Measuring Performance: Trait, behaviour and Results Approach – Determinants of Performance – Performance Dimensions - Measuring Results: Determining Accountabilities – Objective and Performance Standard – Measuring Behaviours: Comparative System – Absolute system – PM cycle and Linking Performance management with Business Strategy

UNIT 3: Performance Planning and Monitoring**10 Hours**

Theory of Goal Setting – Gathering data pertaining to Performance Criteria –Preparation and Communicating Performance System to employees - Appeals Process. Performance Monitoring – Methods and Techniques – Employee Performance Metrics and use of analytics

UNIT 4: Performance Assessment and Review**9 Hours**

Evaluating Individual Performance – Different Methods of Appraisals _ Factors affecting Appraisals – Errors – Reducing Rater Biases - Preventing Rating Distortion –Personal Development Plan - Significance of Performance Review and Discussion Process

UNIT 5: Managing Team Performance and Employee Development**9 Hours**

Definition and Importance of Teams – Types of Teams and Implication for Performance Management – Purpose and Challenge of Team performance Management – Rewarding Team Performance – Role of Performance Coaching – Process and Styles

Total: 45 Hours

Reference Books

1. Aguinis, H, "Performance Management for Dummies", John Wiley & Sons, 2019.
2. Armstrong, M, "Armstrong's Handbook of Performance Management: An Evidence-based Guide to Delivering High Performance", Kogan Page Publishers, 2009.
3. Bacal, R, "Performance Management", 2nd Edition, McGraw Hill Professional, 2012.
4. Herman Aguinis, "Performance Management", 3rd Edition, Pearson Education India, 2013.
5. Rao, T. V, "Performance Management: Toward Organizational Excellence", SAGE Publications India, 2016.

21GB10 TALENT ACQUISITION AND MANAGEMENT**3 0 0 3**

UNIT 1: Introduction to Talent Acquisition	10 Hours
Introduction to Talent Acquisition, Strategic Alignment and HR Planning , HR Planning , Assessing Staffing Need Analysis, Environmental scanning, Forecasting HR requirements and availabilities-demand and supply, Preparing Action Plans – Managing Shortage and Surplus , Best practices & Trends in Talent Acquisition, Challenges in Talent Acquisition.	
UNIT 2 : Attracting Talent	10 Hours
Process of Talent Acquisition and Sources of Recruitment, Internal & External Recruitment, Contract Staffing and Gig Workforce, Selection Tests- Measurement, Importance and use of measures- Reliability and validity of selection tests, Specific use of Psychometric tests in Talent Acquisition	
UNIT 3: Acquiring Talent	10 Hours
Interviewing – Nature and Purpose, Interviewing types and choice of appropriate method based on Needs - Virtual interviews for remote hiring - Interview content- Measurement of attributes and behaviour during Interview, Behavioural Event Interviewing – Assessing the effectiveness of Talent Acquisition	
UNIT 4: Engaging Talent	8 Hours
Introduction to Onboarding, Designing employee Onboarding, Employee Engagement – Benefits, Drivers , Best Practices and Measurement, Employee Retention – Strategies and Approaches for Retaining Talent – Dealing with Voluntary turnover and Job Withdrawals – Role of Coaching and Mentoring in Managing talent. Concerns of Gen X, Y and Z in Talent Management	
UNIT 5: Role of Information Technology in Talent Acquisition	7 Hours
Introduction, Role of Information Technology in Talent Acquisition, Talent acquisition and hiring solutions, Creating Business Value through Information Technology, Impact of Social Media, Mobile apps, Cloud and Bigdata in Talent Acquisition.	
Total:	45 Hours

Reference Books

1. Belcourt, M., & McBey, K. J, "Strategic Human Resource Planning", Cengage Learning, 2017.
2. Bickham, T, "ATD Talent Management Handbook", 1st Edition, ATD Press, 2015.
3. Gatewood, R. D., Feild, H. S., & Barrick, M. R. "Human Resource Selection", 9th Edition, Wessex Press Inc., 2018.
4. Heneman, H., & Judge, T, Staffing Organizations, McGraw Hill, 2015.
5. Picardi, C. A. "Recruitment and Selection - Strategies for Workforce Planning & Assessment", Sage Publication, 2019.

MARKETING ELECTIVES
21GC01 BRAND MANAGEMENT

3 0 0 3**UNIT 1: The foundation & strategic implications of brand building****9 Hours**

Brand- Branding – Brand Management – Product vs. Brand – Brand Equity – Measuring brand equity – Customer-Based Brand Equity Models - How brands create value for customers and company

UNIT 2: Building the brand**10 Hours**

Brand Identity – Developing Brand Identity – Protecting brand identity – Managing Brand Identity (Rebranding) – Brand Positioning – Developing Brand Positioning strategy – Repositioning

UNIT 3: Launching the brand**8 Hours**

Brand Plan Process – Business review – Drivers & Inhibitors – Strategic Questions – Goals - Preparing a Brand Plan – Execution – Brand communication plan – Communication strategy – Target market – Brand idea – Support points – Desired response – Media options

UNIT 4: Managing and Growing the brand**10 Hours**

Brand Architecture and Portfolio Management – Brand Extension – Managing Brand Extensions - Brand Revitalization/Rejuvenation – Managing global brands

UNIT 5: Measuring & Monitoring Brand Performance**8 Hours**

Brand Audit – Brand Valuation – Brand Valuation Methodologies

Total : 45 Hours**Reference Books**

1. Bill Chiaravalle, Barbara Findlay Schenck, Branding for Dummies, Wiley, 2nd Edition, 2015

2. David Aaker, 20 Branding Principles That Drive Success, Sage Publication, 2015
3. Isaac C. Jacob Kevin Lane Keller, VanithaSwaminathan, Ambi M.G. Parameswaran, Strategic Brand Management, Pearson, 5th Edition, 2020.
4. J N Kapferer, The New Strategic Brand Management, Kogan Page, 5th edition, 2017
5. Tapan K Panda, Product and brand Management, Oxford, 2018

21GC02 CONSUMER BEHAVIOUR

3 0 0 3

UNIT 1: Fundamentals of Consumer Behaviour

9 Hours

The Foundations of Consumer Behaviour: Meaning, Personal and Organizational consumers, Consumer's buying behaviour, model of Consumer decision making, marketing concepts. Consumer needs and motivation: Meaning, positive and negative, rational-vs.-emotional, dynamic nature of motivation, frustration, arousal of motives, types and systems of needs.

UNIT 2: Personality and Perception Theories

9 Hours

Personality and self-concept: Definition, Theories, personality and consumer behaviour, self and self-images. Perception: Elements, subliminal perception, the dynamics, consumer imagery, perceived price, quality, and risk.

UNIT 3: Learning and Attitude Formation and Change

9 Hours

Learning and Involvement: Meaning, motivation, Cues, Response, and reinforcement, learning theories. Attitude formation and change: Types of attitudes, structural models, formation, strategies of attitude change.

UNIT 4: Social Influences in Social Class and Culture

9 Hours

Social influences on buyer behaviour and Social Class and consumer behaviour: Communication via the media, Reference Groups, social class, measurement of social class. The influence of family, culture & sub culture on consumer behaviour: definitions, measurement of culture, ethnic, religious, geographic and regional, racial, age and gender as a subculture.

UNIT 5: Consumer Decision Making Models

9 Hours

Decision Making: Definition, Four views, model of consumer decision making, opinion leadership, dynamics of OL process. Organizational Buyer Behaviour: Nature of organizational buying process influences on organizational buyer behaviour, organizational buying decisions.

Total : 45 Hours

Reference Books

1. Jain, V., Sheth, J., & Schultz, D, "Consumer Behaviour, A Digital Native", 1st Edition, Pearson, India, 2019.
2. Mothersbaugh, D., Hawkind, D., & Mookerjee, A, "Consumer Behaviour: Building Marketing Strategy", 13th Edition, McGraw Hill, 2020.
3. Schiffman, L., Wisenblit J, & Ramesh Kumar, S, "Consumer Behaviour", 12th Edition, Pearson, India, 2019.
4. Sethna, Z & Blythe, J, "Consumer Behavior", 4th Edition, Sage, 2020.
5. Solomon, M, "Consumer Behaviour: Buying, Having and Being", 13th Edition, Pearson, 2020.

21GA03 CUSTOMER RELATIONSHIP MANAGEMENT

3 0 0 3

UNIT 1: Customer Centricity

9 Hours

CRM – Need for CRM – Benefits of CRM – CRM in the digital age - Customer Centricity – Characteristics of customer centric companies – Developing a customer centric company

UNIT 2: Customer Experience

10 Hours

Customer Lifecycle – Managing Customer Experience in B2B and B2C -Understanding Customer Journey – Customer Journey Mapping – Customer funnel - Managing customer funnel for better customer experience – Customer onboarding – Onboarding process - Personalization vs. Hyper Personalization- Ways to Hyper personalize

UNIT 3: Customer Analytics

10 Hours

Customer Churn – Customer Acquisition Cost – Revenue Churn – Customer life time value – Recency, Frequency and Monetary – Customer Profitability Analysis

UNIT 4: Customer Satisfaction & Loyalty

8 Hours

Net Promoter Score – Customer Happiness Index (CHI) – Customer Effort Score – Customer Loyalty and Measuring customer loyalty – Exploring loyalty and profitability relationship – Analyzing loyalty programs effectiveness - Marketing Automation for better customer engagement and retention

UNIT 5: Contemporary tools for CRM

8 Hours

Sales force automation – Journey Orchestration – Process management - Sales enablement – Performance management – Predictive sales – Omnichannel – Team collaboration

Total: 45 Hours

Reference Books

1. Francis & Stan MaklanButtle, "Customer Relationship Management: Concepts and Technologies", Routledge, 4th Edition, 2019.
2. Jagdish N Sheth , ParvatiyarAtul, G Shainesh, "Customer Relationship Management : Emerging Concepts Tools & Applications", McGraw Hill, 2017

3. Lars Helgeson, "CRM for Dummies", Wiley Publication, 2017
4. Paul Greenburg, "CRM at the Speed of Light", Tata McGraw Hill, 4th edition, 2017
5. Peter Fader and Sarah Toms, "The Customer Centricity Playbook", The Wharton Press, 2018

21GC04 INBOUND MARKETING

3 0 0 3

UNIT 1: Inbound & Content Marketing	10 Hours
The age of SMAAC and paradigm shifts in Marketing - Inbound Marketing Philosophy- Inbound Vs. Digital Vs. Outbound Marketing - Inbound Marketing Methodology - Inbound Marketing in Practice - CLV - Introduction to Content Marketing - Content Types/Formats - Content Marketing framework - Content Marketing Metrics - Tools for Content Marketing – Effective Blogging	
UNIT 2: Search Engine Optimization	9 Hours
Introduction to SEO and SEM - Understanding Google ranking signals or factors and its correlation to search engine rankings - Rank brain and Quality score - Effective SEO techniques for better search results (On page and Off Page optimization) - SEO audit - Tools for conducting SEO audit - Local SEO – Mobile SEO	
UNIT 3: Social Media Marketing & Programmatic ad	10 Hours
Introduction to Social Media platforms and its characteristics - Trends - Creating a social media strategy - Measuring social media results - Tools for social media marketing - Basics of Programmatic ads – Native Ads	
UNIT 4: E-mail & Mobile Marketing	8 Hours
Email Marketing – Types of e-mails - Creating e-mail marketing strategy - Tools for e-mail Marketing - Measuring e-mail marketing campaigns – Basics of Mobile Marketing	
UNIT 5: Influencer Marketing	8 Hours
Influencers - Role of Influencers in Marketing today - Strategies for Identifying and engaging Influencers - Tools for Influencer Marketing - Creating an influencer marketing campaign and measuring the results (metrics)	
Total:	45 Hours

Reference Books

1. Seema Gupta, "Digital Marketing", McGraw Hill, 2nd Edition, 2020
2. Ryan Deiss & Russ Henneberry, "Digital Marketing for Dummies", Wiley Publication, 2020
3. Simon Kingsnorth, "Digital Marketing Strategy", Kogan Page, 2nd Edition, 2019
4. Brian Halligan & Dharmesh Shah, "Inbound Marketing Revised & Updated", Wiley Publication, 2014
5. Jeremy Kagan & Siddharth Shekar Singh, "Digital Marketing Strategy & Tactics", Wiley, 2020

21GC05 INTEGRATED MARKETING COMMUNICATION

3 0 0 3

UNIT 1: Marketing Communications - Overview

10 Hours

Understanding IMC - Marketing Process - Decisions for Communication Campaign - Elements of Effective brand communication - Branding and Customer Loyalty - Customer Based brand equity model - AIDA model - Hierarchy of effects - FCB Grid - Structure of Ad Industry

UNIT 2: IMC Planning Process

8 Hours

Communication Objectives and Budgeting - DAGMAR Approach - Consumer information processing and decision making - Creativity and Big idea - positioning statement - creative Brief

UNIT 3: Marketing Communications Management and Design

12 Hours

Message strategy and Execution frame work - copy writing and content creation for print, broadcast and digital media - Design principles - layouts - Art direction and production - Media and Media planning - Media scheduling issues - Reach and frequency - GRP - Rating and share - Efficiency of media vehicle

UNIT 4: Marketing Communication Mix

12 Hours

Broad communication strategies - Sales promotion - Public Relations - Brand publicity - Event sponsorship - Social media and digital marketing options - Mobile engagement - Alternative and non-traditional marketing

UNIT 5: Evaluating Marketing Communications

8 Hours

Economic, social and regulatory aspects in IMC - Plagiarism - Stereotype - STAS impact and measurement - Measuring effectiveness of promotional program - Ad Testing methods - Optimal IMC

Total: 45 Hours

Reference Books

1. Belch, George E. and Michael A. Belch, "Advertising and Promotion: An Integrated Marketing Communications Perspective", 11th Edition, Tata McGraw-Hill, 2018.
2. Kenneth E. Clow and Donald Baack, "Integrated Advertising, Promotion and Marketing Communications, 8th Edition, Pearson, 2017.
3. Kruti Shah, Alan D'Souza, Advertising and Promotions an IMC perspective, 1st Edition, McGraw-Hill, 2015.
4. Terence A. Shimp, Integrated Marketing Communication in Advertising and promotion, 10th Edition, Cengage Learning, 2018.

5. Thomas C. O'Guinn, Chris T. Allen, Richard J. Semenik, Advertising Management with Integrated Brand promotion, 8th Edition, Cengage Learning, 2017.

21GC06 MARKETING ANALYTICS

3 0 0 3

UNIT 1: Introduction

9 Hours

Introduction to Marketing Analytics - Evolution of Marketing Data and Analytics timeline - Types of Analytics - Marketing Analytics Applications - Summarizing & Reporting Marketing Data using Excel

UNIT 2: Summarizing Marketing Data

9 Hours

Visualizing Marketing Data using Tableau - Visualizations Using Python & R - Understanding the Metrics across marketing domains - Developing Metrics - Flowchart for Metric Creation

UNIT 3: Marketing Models & Strategies

9 Hours

Marketing Models - Marketing Engineering – Segmentation Analytics – Clustering Algorithms - Positioning Analysis - Data Mining applications

UNIT 4: Marketing Mix Analytics

9 Hours

New Product development decisions - Pricing the Product - Forecasting the Sales – Allocating the Retail space & Sales Resource – Consumer Attribution Modelling Methods

UNIT 5: Marketing Analytics Applications

9 Hours

Customer Churn Modelling – Purchase Behaviour Prediction Models- Social Media Listening and Sentimental Analysis – Market Basket Analysis – RFM Analysis – Recommender Systems development

Total: 45 Hours

Reference Books

1. Chris Chapman, "R for Marketing Research and Analytics", Springer Publications, 1st Edition, 2015.
2. Dinesh Kumar U, "Business Analytics", Wiley India, 1st Edition, 2017.
3. Paul W Farris, "Marketing Metrics: The Definitive Guide to Measuring Marketing Performance", Pearson Education, 2nd Edition, 2010.
4. Tanushri Banerjee & Arindham Banerjee, "Business Analytics- Texts and Cases", Sage Publications, 1st Edition, 2019.
5. Wayne L Winston, "Marketing Analytics – Data Driven Techniques with Microsoft Excel", Wiley Publications, 1st Edition, 2015.

21GC07 MARKETING LOGISTICS

3 0 0 3

UNIT 1: Marketing Logistics : An overview

7 Hours

Concepts, Objectives and Importance of Marketing Logistics; Marketing-logistics interface, Key tasks and value chain activities; Strategic insights: delivering and managing CRM roles and outcomes. creating competitive and marketing advantage; Domestic & International Logistics-The marketing challenges; Special Aspects of Export and import logistics: Documentation, Processes and insights

UNIT 2: Creating and Managing Customer Centric Supply Chain and Logistics

9 Hours

Defining customer service & Developing a Market-driven logistics strategy; Value delivery system, Costs of ownership and Customer Profitability management; Cash to cash cycle, lead-time reduction, Value-added time/non-value-added time, Logistics process re-engineering; Mapping internal and external customer satisfaction - Managing risk in the Supply chain; logistics and performance management, Demand-driven supply chains, Mass customisation; building supply chain resilience, 'agile' supply chains; Balancing Functional Objectives, Integration of Systems Functions in national and International supply Chains; Connecting the supply chain through shared information; Quick response logistics, Efficient Consumer Response strategies

UNIT 3: Containerization and Transportation

11 Hours

Containerization -Genesis, Concept, Classification, Benefits and Constraints; Inland Container Depot (ICD): Roles and Functions - Container Freight Station CFS; Export Clearance at ICD; CONCOR; ICDs under CONCOR; Basics of Transportation, Transportation Functionality and Principles; Multimodal Transport; Modal Characteristics, Modal Comparisons; logistical efficiency - International Air Cargo Transport; Coastal and Ocean transportation, Characteristics of shipping transport- Types of Ships- shipping vessels.

UNIT 4: Warehousing, Packaging and Packing

11 Hours

Warehouse Management-Types Warehousing; Customs Formalities- Clearing, Distribution to Units; Distribution and Omni Channel Network Design; Packing and Packaging -Meaning, Functions and Essentials; Packing for Storage- Overseas Shipment-Inland-Transportation- Product content Protection; Packaging - Types: Primary, Secondary and Tertiary- Requirements of Consumer Packaging; Channel Member Packaging and Transport - Packaging - Shrink packaging; Identification codes, bar codes, and electronic data interchange (EDI); Universal Product Code- GS1- Standards- package labels- Symbols used on packages and labels.

UNIT 5: Logistics 4.0 and Challenges for Marketing

7 Hours

Logistics and Technology –Big data, IoT, AI and Blockchain in Logistics and Supply Chain; Technology embedded freight and transport management; Drone and robotic technologies in logistics- Global Information System GIS and Global Positioning System in logistics; Logistics platforms- a Lean approach for designing - Logistic services outsourcing strategy; Last-mile delivery services and Hyper local platforms, Future scope of E logistics management, ICT in multimodal transport and technological trends.

Total: 45 Hours

Reference Books

1. Bowersox, Closs, Cooper, "Supply Chain Logistics Management", 5th Edition, McGraw Hill, 2020.
2. John J. Coyle, C. John Langley, Jr., Robert A. Novack, Brian J. Gibson, "Supply Chain Management: A Logistics Perspective", 10th Edition, Cengage Publication, 2017.
3. Martin Christopher, Helen Peck, "Marketing Logistics", 2nd Edition, Routledge Taylor & Francis Groups, 2018.
4. Sunil Chopra, Peter Meindl, "Supply Chain Management", 7th Edition, Pearson Education, India, 2018.
5. Yingli Wang, Stephen Pettit, "E-Logistics: Managing Your Digital Supply Chains for Competitive Advantage", Kogan Page, 2016.

21GC08 RETAIL MANAGEMENT**3 0 0 3****UNIT 1: The World of Retailing****9 Hours**

Introduction to Retail - Functions of a Retailer - Retail in India- Theories and Business Models – Internationalization of Retail – Understanding the Retail Customer - Retail strategy.

UNIT 2: Store Location**9 Hours**

Store Site Selection - Choosing a Location - Methods of evaluating a trading area - Retail Franchising - Private Labels - Category Management

UNIT 3: Merchandise Management**9 Hours**

Basics of Merchandising - Process of Merchandise Planning- Methods of Procuring - Pricing and Evaluating Merchandise Performance

UNIT 4: Managing Retail**9 Hours**

Store Operations – Store Layout and Visual Merchandising – Servicing the Retail Customer

UNIT 5: Creating and Sustaining Value**9 Hours**

Retail Marketing and Branding - Retail Management Information Systems – Supply Chain Management

Total: 45 Hours**Reference Books**

1. Bajaj C, TuliRajnish, Srivastava NV, "Retail Management", Oxford University Press, New Delhi, 3rd Edition, 2017.
2. Gibson G Vedamani, "Retail Management", Pearson, 5th Edition, 2017.
3. Levy M, Weitz BA, "Retailing Management", Tata McGraw Hill, Delhi, 8th edition, 2016.
4. Pradhan, Swapna, "Retailing Management - Text and cases", Tata McGraw Hill, Delhi. 5th edition, 2018.
5. Sudarshan S, Prasad R, "Retail Management", McGraw Hill, 1st edition, 2016.

21GC09 SALES AND MARKET DEVELOPMENT**3 0 0 3****UNIT 1: Fundamentals of Sales Management****9 Hours**

Evolution of Sales Management - Nature and types of personal selling - Market development process for developing sales- identify target market, sectors & niches - Market development strategy - Strategic sales planning - Emerging trends in sales Management - Selling Process - Theories of selling - AIDAS - SPIN- Buyer Seller Dyad

UNIT 2: Pre-Sales Process**9 Hours**

Understanding Pre-sales process - prospecting - Qualifying - Lead generation - Role of Market research in customer acquisition - Customer solutions - Pre-Sales Requirement Engineering - Business Analysis - Bid management - Proposal and solution development - RFI, RFP, RFQ - Key Account Management - Customer retention through CRM

UNIT 3: Sales Force Management**9 Hours**

Sales Organization structure - Recruitment and selection of sales personnel - Job Analysis - Sales Training - Motivating Sales personnel - Sales compensation Plan - Sales contests - Sales presentations - Sales pitch - Negotiations skills - Closing the sale

UNIT 4: Formulating Sales Strategy**9 Hours**

Sales forecasting approaches - Forecasting methods - Sales Budget - Sales Territory - Territory design - Control unit - Managing Territorial coverage - Territorial Sales potential - Goal setting process - Administration of Sales Quotas - Information technology role in sales

UNIT 5: Assessing Sales Program**9 Hours**

Sales force expenses - Sales Audit - Evaluating and controlling sales people - Sales Analysis- Sales force Automation Ecosystem - Business ethics and Sales management - Social and Legal Responsibilities

Total: 45 Hours**Reference Books**

1. Charles.M.Futurell, "Fundamentals of selling: Customers for life through service" 12th Edition, McGraw Hill, 2017.
2. David Jobber and Geoffrey Lancaster, "Selling and Sales Management", 10th Edition, Pearson, 2018.
3. Krishna K Havaladar, Vasant M Cavale, "Sales and Distribution Management", 3rd Edition, McGraw Hill, 2019.
4. Richard R. Still, Edward W, Norman Govoni, Sandeep Puri, "Sales and Distribution Management", 6th Edition, Pearson, 2018.

5. Spiro, Stanton and Rich, "Management of Sales Force", 12th Edition, Tata McGraw Hill, 2015.

21GC10 SERVICES MARKETING

3 0 0 3

UNIT 1: Introduction to Services Marketing

9 Hours

Introduction, Why Study Services Marketing Management? The Service System, Characteristics of Services, Understanding the Macro-Environment and the challenges posed for services.

UNIT 2: Services Marketing Strategy

9 Hours

Understanding the Micro-Environment, Services Marketing Process, Services Marketing Research, Exploring Marketing Opportunities, New Service Development, Segmenting the Market, Targeting and Positioning, Understanding ,Consumer Behaviour

UNIT 3: Services Marketing Mix

9 Hours

The Service-Product continuum, Managing Service Delivery Channels, Managing Channel Conflict, Managing Integrated Marketing Communications, Pricing the Service,

UNIT 4: Services Marketing Mix

9 Hours

Managing Customers, Educating Customers , Designing the Service Process , Designing the Physical Evidence, Managing People

UNIT 5: Service Quality & Applications

9 Hours

Developing Service Personnel, , Managing Service Quality - Managing Service Recovery, Providing Service Guarantees, Consumer Protection, Managing Demand and Capacity, Case Studies

Total: 45 Hours

Reference Books

1. Christopher Lovelock, Jochen Wirtz, Jayanta Chatterjee, "Services Marketing – People, Technology, Strategy", Pearson Publications, 7th Edition, 2016.
2. Helen Woodruff, "Services Marketing", Himalayan Publishing House, 2017.
3. Jeff Toister, "The Service Culture Handbook: A Step-by-Step Guide to Getting Your Employees Obsessed with Customer Service", AMACOM, 2016.
4. Roland Rust, "Services Marketing", Macmillan Limited, 2016.
5. Zeithaml, V.A., Bitner, M.J., Gremler, D.D, "Services Marketing: Integrating Customer Focus Across the Firm", McGraw-Hill Education, 7th Edition, 2018.

DECISION SCIENCES ELECTIVES

21GD01 DESIGN THINKING

3 0 0 3

UNIT 1: Introduction to Design Thinking

9 Hours

Types of thinking – Analytical, Intuitive, Deduction, Induction, Abduction; Definitions of Design Thinking, Principles and elements of Design Thinking, Human centric approach

UNIT 2: Design Thinking Process – Stage 1

9 Hours

Understanding the business hypothesis, customer perspective, inspiration, visualization through storyboarding etc.

UNIT 3: Design Thinking Process – Stage 2, 3

9 Hours

Defining the problem, Data Collection, Observation techniques, gaining insights, Ideation, concept development

UNIT 4: Design Thinking Process – Stage 4, 5

9 Hours

Experimentation, prototyping principles, Prototyping, Testing, Assumptions Identification

UNIT 5: Design Thinking for Innovation

9 Hours

Design Thinking in organizations, how to diffuse DT into work culture, Using DT to innovate in business, Disruptive innovation

Total: 45 Hours

Reference Books

1. Jimmy Jain, "Design Thinking for Startups: A Handbook for Readers and Workbook for Practitioners", 1st Edition, Notion Press, 2018.
2. Kelley, Tom, and Littman, Jonathan, "The Art of Innovation: Lessons in Creativity from IDEO, America's Leading Design Firm", Profile Books Ltd, 2016.
3. Lewrick, Link, Liefer, "The Design Thinking Toolbox: A Guide to Mastering the Most Popular and Valuable Innovation Methods", Wiley, 1st Edition, 2020.
4. Roterberg, "Design Thinking for Dummies, For Dummies", 1 Edition, John Wiley & Sons Inc (US), 2020.
5. Tim Brown, "Change by Design, Revised and Updated: How Design Thinking Transforms Organizations and Inspires Innovation", Harper Business, 5th Edition, 2019.

21GD02 INDUSTRIAL MANAGEMENT

3 0 0 3

UNIT 1: Purpose, Policy, Procedures

9 Hours

Sarasohn framework – Organization purpose, creating a purpose statement; Policies: types of policies-administrative & Management, principles of policies, components of a policy – procedures – creating a policy policy vs strategy

UNIT 2: Organization Zones, Forms and Departments

9 Hours

Zones of organization – function, authority, responsibility and accountability; Different forms of an organization – Line, Functional, Line and staff – line to staff continuum – advantages and disadvantages of different forms of organizations; Departments of an organization – functions and responsibilities – organization chart; Construction of an organization – principles, span of control decision, manpower estimation, control specification

UNIT 3: Organizational Control Basics

9 Hours

Need for organizational control – Man control vs fact control; Prerequisites of control, phases of control, application of control; Production control, personnel control, quality control

UNIT 4: Controlling Cash Flows

9 Hours

Four bucket cash flow framework – creating 4 bucket cash flow from raw cash flows and balance sheets – judging cash flow position of a firm; Cash flow control framework – what to control: Stock control, Expense control, debtor control; CRE analysis of expenses

UNIT 5: Building for Future

9 Hours

Operations – Four principles, decisions to make; Building for the future – Programmed management; Keys for success – leadership, teamwork, communication

Total: 45 Hours

Reference Books

1. Khanna O P, "Industrial Engineering and Management", Dhanpat Rai Publications, 2018.
2. Gavriel Salvendy, "Handbook of Industrial Engineering: Technology and Operations Management", 3rd Edition, Wiley, 2001.
3. Homar M. Sarasohn, Charles A. Protzman, "The fundamentals of Industrial Management: CCS Management Course", McGraw-Hill, 1998.
4. Kjell B. Zandin, "Maynard's Industrial Engineering Handbook", 5th Edition, McGraw-Hill, 2001.
5. Zindani.D and Kumar K, "Industrial Engineering and Management", Dreamtech press, 2020.

21GD03 NEW PRODUCT DEVELOPMENT

3 0 0 3

UNIT 1: Introduction, Development Process and Opportunity Identification

9 Hours

New product development-characteristics of a successful product, design job, duration and cost of new product development, challenges of new product development; Product development process and organization – concept development – adapting generic product development process – product development process flows - product development organization; Identifying opportunities – six steps of identification; Management commitment – Review process: Status review, near end review

UNIT 2: Product Planning, Need Identification, Product Specification

9 Hours

Product planning – Identify opportunities – Prioritise and evaluate projects – Resource allocation and timing – complete pre project planning – reflection on results and process; Customer need identification – raw data gathering – interpreting data – organize needs – prioritise needs – results & process audit; Product specifications – what and when – target specifications – final specifications

UNIT 3: Concept Generation, Selection and Testing

9 Hours

Concept generation – problem clarification – external search – internal search – systematic exploration; Concept selection – concept screening, six steps – concept scoring, six steps; Concept testing – seven steps

UNIT 4: Product Architecture and Design for Industry and Environment

9 Hours

Product architecture – modularity – implications – establishing architecture – platform planning – system level design issues; Industrial design – meaning, need – assessing need, impact – industrial design process – quality assessment
Design for environment – Meaning, need, – DFE process

UNIT 5: Design for Manufacturing & Supply Chain, Prototyping and Robustness

9 Hours

Design for manufacturing and supply chain – Meaning, need, requirements – seven steps; Prototyping – meaning, need, principles, technologies, planning; Robust Design – Meaning, need, seven step robustness process; Patents and intellectual property – meaning, need 7 step process

Total: 45 Hours

Reference Books

1. Crawford, "New Products Management", McGraw Hill, 11th Edition, 2020.
2. Fradin, "Successful Product Design and Management Toolkit", Wiley, 2019.
3. Lawley, Shure, "Product management for dummies", Wiley, 2017.
4. Olsen, (2015), "The Lean Product Playbook: How to Innovate with Minimum Viable Products and Rapid Customer Feedback", Wiley, 1st Edition, 2015.
5. Ulrich, Eppinger and Yang, "Product Design and Development", McGraw Hill, 7th Edition, 2020

21GD04

OPERATIONS MODELLING AND SIMULATION

3 0 0 3

UNIT 1: Process and Simulation	9 Hours
Business Process- Constituents of a process- Basic tools for process design- Introduction to Simulation- Steps in a Simulation Study - Scope of simulation in operations management.	
UNIT 2: Monte-Carlo Simulation Technique	9 Hours
Discrete event simulation – Random number tables- Random number generation – Testing of randomness by Wald-Walfowitz run test- Manual problems in Service, Quality-Control chart –Project management – General applications.	
UNIT 3: Application of Probability Distribution In Simulation	9 Hours
Histogram-Uniform, Normal and Exponential distribution modelling- Test of Normality – Goodness of fit – Kolmogorov Smirnov test -Supply chain– Outbound and Inbound logistics - Spreadsheet solutions	
UNIT 4: Simulation of Inventory Management Problems	9 Hours
Periodic Review model-Continuous review model- Base stock policy – Software applications.	
UNIT 5: Assessing the Alternative Models	9 Hours
Manufacturing process strategies-Waiting line (QUEUEING) model strategies- Software application - Statistical hypothesis techniques - Analysis of Variance Technique – Optimization within simulation	
Total:	45 Hours

Reference Books

1. Bandyopadhyay, S., & Bhattacharya, R, “Discrete and Continuous Simulation: Theory and Practice”, CRC Press, 2014.
2. David Hartvigsen, “Simquick: Process Simulation with Excel”, Prentice Hall,2nd Edition, 2008.
3. Greasley, A, “Simulation Modelling for Business”, Routledge, 2017.
4. Jerry Banks, John S. Carson II, Barry L. Nelson and David M. Nicol, “Discrete-Event System Simulation”, Pearson Education, 2011.
5. Rubinstein, R. Y., &Kroese, D. P, “Simulation and the Monte Carlo method”, 10th Edition, John Wiley & Sons, 2016.

21GD05 PROJECT MANAGEMENT

3 0 0 3

UNIT 1 : Project Management Framework	9 Hours
Project Management - Program Management - Portfolio Management -Organizational Structures - Project Life Cycle	
UNIT 2 : Integration Management	9 Hours
Charter - PM Plan - Change Control - Scope Management - Collect Requirements Project Scope – WBS - Validate and Control Scope	
UNIT 3 : Estimating Time and Cost	9 Hours
Activities – Schedule - Estimation of Resources and Estimate Duration – PERT – CPM - Estimate Cost - Determine Budget and Control Cost - Earned Value Management	
UNIT 4 : Manage Quality, Human Resource and Communication	9 Hours
Quality Management – Assurance - Quality Control, HR Management – Plan – Acquire – Develop - Manage HR - Communication Management	
UNIT 5 : Manage Risk, Procurement and Stakeholders	9 Hours
Risk Management- Identification of Risk, Quantitative and Qualitative Risk Analysis - Risk Response Procurement Management – Plan Conduct, Control and Close- Managing Stake Holders Expectations	
Total:	45 Hours

Reference Books

1. Andrew Stellman, “Head First PMP”, Shroff Publishers, 4th Edition, 2018.
2. Kim Heldman, “PMP: Project Management Professional Exam Study Guide”, Wiley, 7th Edition, 2013.
3. Project Management Institute,“A Guide to the Project Management Body of Knowledge”, PMI, 6th Edition, 2018.
4. Rita Mulcahy, “PMP Exam Prep: Rita's Course in a Book for Passing the PMP Exam”, RMC Publications Inc., 9th Edition, 2018.
5. Vidya Subramanian, “PMP Certification Mathematics”, McGraw Hill Education, 2010.

21GD06 SUPPLY CHAIN MANAGEMENT

3 0 0 3

UNIT 1: Introduction and Strategic View to Supply Chains

9 hours

Evolution of supply chain-Concepts in supply chain – Importance of supply chain – Enablers of supply chain performance – Supply chain performance in India; Customer service vs cost tradeoffs, SCM performance measures: SCOR model, financial data based measures: Supply chain length, supply chain inefficiency, supply chain working capital productivity

9 hours

UNIT 2: Supply Chain Configuration

Make vs buy decision – Functional vs innovative product – Efficient vs responsive supply chain; Two approaches to outsourcing – Focal firm vs hollow firm; Market vs hierarchy, sourcing strategy

9 hours

UNIT 3: Managing Material Flows in Supply Chain

Inventory Management – Types of inventory, inventory costs, managing different kinds of stock; Transportation – Drivers of decision, modes of transport, strategies of distribution; Network Design – Network optimization, restructuring

9 hours

UNIT 4: Managing Information Flows in a Supply Chain

Demand forecasting – role of forecasting, forecasting methods, forecasting errors, bull whip effect; Information technology – information requirement, four kinds of functions of IT, impact of information on inventory

9 hours

UNIT 5: Supply Chain Innovations

Supply chain integration – internal and external, impact, enablers; Supply chain restructuring – process restructuring, flow restructuring, inventory placement restructuring; Agile supply chains – High demand uncertainty, five disruptions, dual forecasting, disruption handling; Pricing and revenue management – multiple customer segment pricing, service level determination, limited capacity situations, pricing under capacity constraints

Total: 45 Hours

Reference Books

1. Bowersox, Closs, Cooper, "Supply Chain Logistics management", McGraw Hill, 4th Edition, 2018.
2. Chopra, Meindl, Kalra, "Supply Chain Management", Pearson Education, 7th Edition, 2018.
3. Coyle, Langley, Novack, Gibson, "Supply Chain management: A Logistics Perspective", Cengage India Pvt Ltd, 10th Edition, 2019.
4. Janat Shah, "Supply Chain Management: Text and Cases", Pearson Education, 2nd Edition, 2016.
5. Simchi Levi D, Simchi Levi E, Ravishankar, "Designing and Managing the Supply Chain", McGraw Hill, 3rd Edition, 2019.

21GD07 TECHNOLOGY MANAGEMENT

3 0 0 3

UNIT 1: Technology and its Importance in Business

9 Hours

Definition – Features – Importance – Benefits – Achieving competitive advantage through technology – Types of technologies – Technology portfolio – Technology life cycle – Technology as an investment

UNIT 2: Management of Technology

9 Hours

Overview - Objectives of MOT - Strategic Management of Technology (SMOT) - Exploitation of Technology - Principles of MOT - The role of R&D in an organization - New product development process

UNIT 3: Technology Forecasting

9 Hours

Methods of forecasting technology - Technology obsolescence - Technology discontinuity - Technology audit - Technology scouting

UNIT 4: Absorption and Diffusion of Technology

9 Hours

Technology Transfer - Technology Evaluation - Technology Absorption - Technology Adoption - Technology Diffusion - Technology Cycles - Technology Commercialization - Business Strategy And Technology Strategy - Strategy And Strategic Management - Technology Strategy - Linking Business And Technology Strategy

Unit 5: Organizational Structure, Organizational Learning and Leadership

9 Hours

Human resource for managing technology - The importance of organizational structure - The structure of an innovative organization - The role of a leader in an innovative organization - Risks and uncertainties associated with technology

Total: 45 Hours

Reference Books

1. DilakCentindamar, Rob Phaal, David Probert, "Technology Management: Activities and tools", Palgrave Macmillan, 2016.
2. Joseph j.Bambara, "Block Chain: A Practical Guide to developing Business, Law and Technology Solutions", McGraw Hill, 2021
3. Ravi Shanker, TarekKhalil,"Management of Technology , A key to competitiveness and wealth creation", 2nd Edition, McGraw Hill Education, 2017
4. ShankerDubey, Sanjiva"A brief Course on Technology Management", 2nd Edition, Eastern Economy Edition, 2019
5. VijaykumarKhurana and Anil K.Saini, "Management of Technology and Innovation",2nd Edition, Ane Books, 2017.

21GD08 THEORY OF CONSTRAINTS

3 0 0 3

UNIT 1: Thinking TOC Way

9 Hours

Theory of constraints – Philosophies-Goal of an organization-Appreciation of variability and dependency. TOC mindset-Pillars -Thinking process-Logically and clearly-Six layers of resistance to change- Goal tree- Strategic tree-Current Reality Tree, Evaporating cloud, Future Reality Tree-Prerequisite trees - Mafia marketing offers

UNIT 2: Throughput Accounting

9 Hours

Weighing the decision making by money - TOC Measurements on Productivity-Throughput, Operating Expenses, Inventory – Problems on identification of the same from the financial transactions-Difference between TA -Cost accounting-Lean accounting-Cost world vs throughput world- Decision making based on exposed capacity. Throughput-margin per unit –T per time unit in factory hours.

UNIT 3: TOC Production

9 Hours

Five focusing steps- Type of Constraints. Identifying the physical constraint. Production planning – Drum buffer rope (DBR) method. Drum buffer and shipping buffer-TOC classification of manufacturing plants.

UNIT 4: TOC Supply Chain Management

9 Hours

Replenishment policy – Addressing the uncertainty -Dynamic buffer management - Aggregation -Responsive supply chain

UNIT 5: TOC Project Management

9 Hours

Assumptions on Project management – Critical chain project management – Planning and Execution- Buffers – Fever chart - Throughput Dollar days and Investment Dollar days

Total: 45 Hours

Reference Books

1. Bragg, S. M., "Throughput Accounting: A Guide to Constraint Management", John Wiley & Sons, 2012.
2. Corbett, T., "Throughput Accounting: TOC's Management Accounting System", Great Barrington: North river press, 1998.
3. Dettmer, H. W., "The Logical Thinking Process. A Systems Approach to Complex Problem Solving", American Society for Quality, 2007.
4. Goldratt, E. M., "The Goal", Productivity Press India Ltd, 2002.
5. Sekkizhar J, "Throughput accounting: Numerical solutions from Theory of Constraints", KiDP publishing, 2020.

21GD09 TOTAL PRODUCTIVE MAINTENANCE AND LEAN MANAGEMENT

3 0 0 3

UNIT 1 : Lean Introduction

9 Hours

Introduction – Background - Lean Thinking - Rules of Gemba, 3M - Seven Wastes - VA and NVA - Principles of Flow - Learning to See

UNIT 2 : Lean Management Core Concepts

9 Hours

5S Implementation Procedure - Layout Modification - Value Stream Mapping - Video Analysis

UNIT 3 : Lean Tools and Methodologies

9 Hours

Mistake Proofing - Quick Changeover - Kanban - Inventory Management - Visual Management - Kaizen - A3 - Single Piece Flow vs Batch Production - TAKT/Cycle Time - Balancing the Line

UNIT 4 : Total Productive Maintenance

9 Hours

Introduction to TPM Concept - Objectives and Functions - Developing the TPM Implementation Plan - Pillars of TPM - TPM organization

UNIT 5 : Scientific Problem Solving

9 Hours

Scientific problem solving - PDCA Cycle - SDCA Cycle, Human and Method Problems - TWI – Introduction - Job Instruction - Job Relations - Job Methods - TWI and Flow - Follow up Initiatives

Total: 45 Hours

Reference Books

1. James P. Womack and Daniel T. Jones, "Lean Thinking: Banish Waste and Create Wealth in Your Corporation", Free Press, 2015.
2. Jeffrey Liker and David Meier, "The Toyota Way Fieldbook", Tata McGraw Hill, 2005.
3. Jeffrey Liker and David Meier, "Toyota Talent: Developing Your People the Toyota Way", Tata McGraw Hill, 2007.
4. Masaaki Imai, "Gemba Kaizen: A Commonsense Approach to a Continuous Improvement Strategy", Tata McGraw Hill, 2012.
5. Mike Rother, "Toyota Kata: Managing People for Improvement, Adaptiveness and Superior Results", Tata McGraw Hill, 2009.
6. Pascal Dennis, "Lean Production Simplified: A Plain-Language Guide to the World's Most Powerful Production System", Productivity Press, 3rd Edition, 2015

21GD10 TOTAL QUALITY MANAGEMENT

3 0 0 3

UNIT 1 : Introduction to Quality Management

9 Hours

Quality Definition - Quality Gurus and their Principles - Deming, Juran and Crosby - Total Quality Management - Importance of Quality Efforts - Quality Maturity - Service Quality

UNIT 2 : Quality Planning

9 Hours

Quality Policy - Quality Organization - ISO 9000 Principles and Documents - ISO Certification Process - Extended ISO Certification - Quality Awards

UNIT 3 : Quality Control Tools-Design

9 Hours

Quality Function Deployment - Failure Mode Effect Analysis - Design for Six Sigma

UNIT 4 : Quality Control Tools, Process and Acceptance Sampling

9 Hours

7 Tools of Quality Control - 7 Quality Management Tools - Acceptance Sampling for Variables and Attributes

UNIT 5 : Quality Improvement Tools

9 Hours

Kaizen Principles – PDCA - 5S – TPM - Six Sigma Organization and Process

Total: 45 Hours

Reference Books

1. Besterfield et al, "Total Quality Management", Pearson Education, 5th Edition, 2018.
2. Joseph M. Juran, "Juran's Quality Handbook", McGraw Hill, 5th Edition, 1998.
3. Poornima M Charantimath, "Total Quality Management", Pearson Education, 3rd Edition, 2017.
4. Stacy Escobar, "Total Quality Management and Six SIGMA", Clanrye International, Illustrated Edition, 2015.
5. Sunil Sharma, "Total Quality Management: Concepts, Strategy and Implementation for Operational Excellence", SAGE Publications Pvt. Ltd, 1st Edition, 2018.

21GE01 E-BUSINESS MODELS

3 0 0 3

UNIT 1 : Introduction to E-Business Models

9 Hours

Overview of E-Business - Information Services - Interpersonal Communication - Shopping Services - Virtual Enterprises - B2C - B2B - C2C - P2P – M-commerce - Business Models in Emerging E-commerce areas

UNIT 2 : E-Commerce Infrastructure

9 Hours

Internet Environment for E-Commerce - Providers and Vendors of E-Business Software - E-Business Enabling Technologies - Intranet and Extranet for E-Commerce - Identification and Tracking Tools for E-Commerce - Overview of Internet Bandwidth and Technology Issues - Electronic Data Interchange (EDI) to E-Commerce - EDI - UN/EDIFACT Standard

UNIT 3 : Payment and Security

9 Hours

E-commerce Security Environment - Security Threats - Technology Solutions - Encryption Methods - Policies and Laws - Credit Card Transactions - B2C Digital Payment Systems - B2B Payment Systems

UNIT 4 : Legal Issues

9 Hours

Paper Document vs Electronic Document - Legal Issues for Internet Commerce- Technology for Authenticating Electronic Document - Laws for E- Commerce in India - EDI Interchange Agreement

UNIT 5 : Retailing and Supply Chain

9 Hours

Online Retail Industry Dynamics - Online Mercantile Models from Customer Perspective - Management Challenges in Online Retailing - Online Publishing Approach from Customer Perspective - Supply Chain Management Fundamentals - Intranets and Supply Chain Management - Managing Retail Supply Chains - Supply Chain Application Software

Total: 45 Hours

Reference Books

1. David Whiteley, "E-Commerce: Strategy, Technologies and Applications", Indian Edition, McGraw Hill Publications, 2017.
2. Jelassi, Tawfik, Martínez-López, Francisco J, "Strategies for e-Business - Concepts and Cases on Value Creation and Digital Business Transformation", Springer Publications, 2020.
3. Joseph P T, "E-Commerce: An Indian Perspective", PHI Publications, 5th Edition, 2015.
4. Kenneth C Laudon and Carol GuercioTraver, "E-Commerce – Business, Technology, Society", Pearson Publication, 15th Edition, 2019.
5. UrmiDatta & NehaSomani, "E-commerce and Business Communication", Oxford University Press, 1st Edition, 2017.

21GE02 INFORMATION SECURITY MANAGEMENT

3 0 0 3

UNIT 1: Network Security

Telecommunications and Network Security – Securing the Grid – Attacks in Mobile Environments

9 Hours

UNIT 2: Security Governance

Information Security Governance and Risk Management – Security in the Cloud – Digital Rights Management – Policies, Standards, Procedures and Guidelines – Security Awareness Training

9 Hours

UNIT 3: Security in Software Applications

Application Development Security – Application Issues – Systems Development Controls – Security in the Software Development Life Cycle

9 Hours

UNIT 4: Cryptography

Cryptography Concepts, Methodologies and Practices – Cloud Cryptography – Security Architecture and Design – Security Models, Architectures and Evaluation Criteria – Identity and Access Management Architecture

9 Hours

UNIT 5: Data Storage Security

Data Storage and Network Security – Legal Regulations – Information Law – Investigations – Major Categories of Computer Crime – Compliance

9 Hours

Total: 45 Hours

Reference Books

1. Abhishek Chopra, Mukund Chaudhary, "Implementing an Information Security Management System - Security Management Based on ISO 27001 Guidelines", Apress Publications, 2020.
2. Henry Dalziel, (2015), "Infosec Management Fundamentals", Elsevier Publications, 2015.
3. HeruSusanto, Mohammad Nabil Almunawar, (2018), "Information Security Management Systems - A Novel Framework and Software as a Tool for Compliance with Information Security Standard", Apple Academic Press, 2018.
4. Thomas R.Peltier, (2017), "Information Security Fundamentals", 2ndEdition, Auerbach Publications, 2017.
5. Tony Campbell, "Practical Information Security Management - A Complete Guide to Planning and Implementation", Apress Publications, 2016.

21GE03 MATERIALS MANAGEMENT

3 0 0 3

UNIT 1: Introduction

Enterprise Resource Planning – Need for an ERP – Benefits from an ERP system – ERP and Enterprise Applications – Introduction to SAP S/4HANA, The Intelligent Enterprise – Organizational, Master and Transaction Data Type – Introduction to SAP S/4HANA Navigation

9 Hours

UNIT 2:SD Prerequisites

Introduction to Sales and Distribution - Evolution – Importance – Score and Objectives – Interface with other functions necessities – Organizational Structure – Customer – Material – Condition Master – Output

8 Hours

UNIT 3:Order to Cash

Order to Cash - Pre-sales Activity – Inquiry – Quotation – Sales Order – Delivery Scheduling (Backward and Forward) – Shipping & Routing Determination – Availability Check – Pricing – Credit Check – Shipping & Transportation – Delivery Creation – Delivery Document – Picking, Loading and Packing – Goods Issue – Billing – Billing Documents and Methods – Payment – Document Flow – Process Debugging

10 Hours

UNIT 4:MM Prerequisites

Materials Management – Evolution – Importance – Score and Objectives – Interface with other functions necessities – Organizational Structure - Material – Vendor – Purchasing Scenarios -MM Master Data Creation – Vendor Master Data – Material Master – Purchasing Information Record

8 Hours

UNIT 5:PurchasetoPay

Procure to Pay Process – Purchase Requisition – Requisition Sourcing – Internal Sourcing – Source List - Outline Agreement - Request for Quotation – Quotation from Vendor – Evaluate Quotations – Vendor Evaluations - Create Purchase Order Referencing an RFQ – Purchase Order Structure and Output - Goods Receipt - Material Movements – Effects of Good Receipt - Invoice Processing – Payment to Vendor – Goods Receipt/Invoice Receipt/Recon Account – Finance & Procurement Integration - Purchase Order History

10 Hours

Total: 45 Hours

Reference Books

1. Christian van Helfferren, "Sales with SAP S/4HANA: Business Process and configuration", 1st Edition, SAP Press, 2019.
2. Glynn Williams, "Implementing SAP ERP Sales & Distribution", 1st Edition, McGraw Hill Education (India) Private Limited, 2017.
3. Jawad Akhtar and Martin Murray, "Materials Management with SAP S4/HANA", 2nd Edition, SAP Press, 2020.
4. Krishna K Havaldar and Vasant M Cavalw, "Sales and Distribution Management: Text and Cases", 3rd Edition, McGraw Hill Education (India) Private Limited, 2017.
5. Stephen N Chapman, J R Tony Arnold, Ann K Gatewood and Lloyd M Clive, "Introduction to Materials Management", 8th Edition, Pearson Education Ltd.

21GE04 PRODUCTION PLANNING

3 0 0 3

UNIT 1: Introduction

9 Hours

Role and Importance of PPC in various manufacturing systems - Functions of PPC – Manufacturing Process Cycle – Basics of Production Plan - Capacity Planning - Estimating - Routing - Loading - Dispatching – Expediting

UNIT 2: PP Prerequisites

9 Hours

Introduction Production Planning – Manufacturing Execution (Discrete/Repetitive/Kanban) – Production Process Industries – Organizational Structure - Material – Bill of Material – Single/Multi/Variant BOM – BOM Item Categories – Routing – Work Centre – Product Group

UNIT 3: PP Process

9 Hours

Material Planning – Production Planning and Execution – Forecasting – Sales and Operations Planning (SOP) – Demand Management – Planned/Customer Independent Requirements (PIR/CIR) - Planning Strategies (MTS/MTO) – Master Production Schedule (MPS) – Material Requirement Planning (MRP) – Net Requirements - Lot Sizing – Procurement Type – External and Internal Procurement – Output of MRP & Orders

UNIT 4: Manufacturing Execution Process

9 Hours

Manufacturing Execution Process – Production Proposal – Production Order – Schedule – Release – Availability Check – Schedule and Release – Shop Floor Documents – Material Withdrawal – Confirmations – Good Receipt – Order Settlement

UNIT 5: Warehouse Management

9 Hours

Introduction to Warehouse Management – Organizational Structure – Master Data (Storage Bin – Material – Hazard – Batch Master Data) – Process Management and Control - Types of Goods Movements – Transfer Posting and Stock Transfer – One-Step/Two-Step Procedures – Stock Transport Order – Logistics Execution (Goods Receipt and Issue) – Picking – Packing – Shipping – Physical Inventory

Total: 45 Hours

Reference Books

1. ElkeRoettig, "Inventory Management and Optimization in SAP ERP", 1st Edition, Rheinwerk Publishing, 2016.
2. Jawad Akhtar, "Production Planning with SAP S/4HANA", 1st Edition, Rheinwerk Publishing, 2019.
3. Kiran, D.R., "Production Planning and Control: A Comprehensive Approach", 1st Edition, Butterworth-Heinemann, 2018.
4. Mukhopadhyay, S. K, "Production Planning and Control: Text and Cases", 3rd Edition, PHI Learning Pvt. Ltd, 2015.
5. NamitaSachan and Aman Jain, "Warehouse Management with SAP S/4HANA", 2nd Edition, Rheinwerk Publishing, 2020.

21GE05 ARTIFICIAL INTELLIGENCE AND INTERNET OF THINGS

3 0 0 3

UNIT 1 : Introduction

9 Hours

Introduction to Artificial Intelligence – Artificial Intelligence/Machine Learning/Deep Learning - Application of Deep Learning in Business-Reinforcement Learning

UNIT 2 : Components of Artificial Intelligence

9 Hours

Improving Operational Effectiveness and Strategic Innovation using Artificial Intelligence - Introduction to Block Chain - Internet of Things - Quantum Computing

UNIT 3 : Developing Artificial Intelligence Models

9 Hours

Building an AI Powered Business - Data Driven Decision Making

UNIT 4 : Applications of Artificial Intelligence in Business

9 Hours

Application of Artificial Intelligence in Marketing, Sales and Customer Service -Data to Scores - Chat Bots - Call Centre Rep Automation - Workflow Automation – Ad Content Prediction

UNIT 5 : Implementing Artificial Intelligence

9 Hours

Concept to Implementation - Implementation of Artificial Intelligence Technology – AI platforms - Data Eco System - Building Expert Teams - Algorithm – Data Feedback System

Total: 45 Hours

Reference Books

1. Adelyn Zhou, Marlene Jia, Mariya Yao, "Applied Artificial Intelligence: A Handbook for Business Leaders", Topbots, 2018.
2. Ajay Agrawal, Joshua Gans, Avi Goldfarb, LJ Ganser, "Prediction Machines: The Simple Economics of Artificial Intelligence", Audible Studios, 2018.
3. Doug Rose, (2018), "Artificial Intelligence for Business: What You Need to Know about Machine Learning and Neural Networks", Chicago Lakeshore Press, 1st Edition, 2018.
4. Katie King, "Using Artificial Intelligence in Marketing: How to Harness AI and Maintain the Competitive Edge", Kogan Page, 1st Edition, 2019.
5. Prabhat Kumar, "Artificial Intelligence: Reshaping Life and Business", BPB Publications, 1st Edition, 2019.

21GE06 DATA VISUALIZATION

3 0 0 3

UNIT 1: Data Visualization –A primer of Business Intelligence

8 Hours

Business Intelligence - Data Visualization Evolution and Characteristics – Importance of Data Visualization –Data Visualization Process - Data Visualization Tools and Software - Data Visualization Techniques – Best Practices in Data Visualization

UNIT 2: Data visualization Using Tableau – Basics

9 Hours

Introduction to Tableau – Tableau interface & Architecture – Data connections & Data Sources – Preparation of Data – Exploring and analyzing data – Creating basic charts – Apply analytics to a worksheet – Creating Groups and Hierarchies - Mapping -Sharing Insights

UNIT 3: Data visualization Using Tableau – Advanced

9 Hours

Advanced calculations - Parameters – Special Charts -Creation of Dashboards – Dashboard Actions -Story Boards Preparation - Sharing the work – Profile creation in Tableau Public

UNIT 4: Reports & Dashboards using Power BI

10 Hours

Power BI introduction – Power BI Architecture & Process – Connecting Power BI with different Data Sources – Power Query for Data transformation- Data Modelling in Power BI – Reports – Visualization types in Power BI – Statics and Live Dashboards- Data Refresh & Security

UNIT 5: Visualizing through R , Python & Qlikview

9 Hours

Grammar of Graphics – GGplot and visualizations using R – Advanced visualizations using matplotlib, seaborn and pyplot – Qlikview overview

Total: 45 Hours

Reference Books

1. Cole NussbaumerKnaflic, "Storytelling with Data: A Data Visualization Guide for Business Professionals", Amazon Asia-Pacific Holdings Private Limited, 2015.
2. Devin Knight, "Microsoft Power BI Complete Reference: Bring your data to life with the powerful features of Microsoft Power BI", PacktPublishing, 2018.
3. Eric Pimpler, "Data Visualization and Exploration with R: A practical guide to using R, R Studio, and Tidyverse for data visualization, exploration, and data science applications", Amazon Asia-Pacific Holdings Private Limited, 2017.
4. Ryan Sleeper, "Practical Tableau", O'Reilly Media, 2018.
5. The Open University, "Visualization: Visual representations of data and information", Amazon Asia-Pacific Holdings Private Limited, 2016.

21GE07 MACHINE LEARNING

3 0 0 3

UNIT 1 : Introduction

9 Hours

Introduction to Machine Learning – Artificial Intelligence – Deep Learning - Practical Applications of Machine Learning, Artificial Intelligence, Deep Learning – Dimensionality Reduction Techniques – Factor Analysis

UNIT 2 : Supervised Machine Learning Techniques

9 Hours

Conjoint Analysis – Full/fractional factorial design, choice cards, attribute Importance. Linear Discriminant Analysis - Fisher's method, Mahalanobis method, Standardised coefficients, Unstandardised coefficients, Structured coefficients. Naïve Bayes – Bayes theorem, conditional probability, building naïve bayes classifier

UNIT 3 : Advanced Supervised Machine Learning Techniques

9 Hours

Random Forest – Out of bag error rate, variable importance, tuning hyperparameters. SVM – hyperplanes and support vectors, SVM model building. Ensemble Methods – bagging, boosting, adaboost, gradient boosting, extreme gradient boosting, bias variance trade off, Synthetic minority oversampling technique.

UNIT 4 : Artificial Neural Networks

9 Hours

Neural networks – Neural network model building – Perceptron – Bias – Activation Function – Hidden layers – Forward Propagation – Backward Propagation – Introduction to Convolutional Neural Network and Reinforcement Learning

UNIT 5 : Time Series Analysis

9 Hours

Visualizing time series data - Components of Time Series Data - Stationarity of the Data - Differencing the Time Series – Time Series Models - Simple Exponential Smoothing, Double Exponential Smoothing, Holt's Model, Holt Winters – additive model, multiplicative model - Auto-Regressive Integrated Moving Average Model Building - Residual Analysis - Auto ARIMA Model

Total: 45 Hours

Reference Books

1. Daniel T.Larose and Chantal D, Larose, "Data Mining and Predictive Analytics", Wiley, 2nd Edition, 2018.
2. Dean Abbot, "Applied Predictive Analytics- Principles and techniques for the professional data analyst", Wiley, 2018.
3. Efraim Turban, Ramesh Sharda, DusunDelen, "Business Intelligence and Analytics- Systems for Decision support", Pearson, 10th Edition, 2018.

4. Gordon S.Linoff, MichealJ.A.Berry, "Data Mining Techniques", Wiley, 3rd Edition, 2017.
5. MehmedKantardzic, "Data Mining- Concepts, Models, Methods and Algorithms", Wiley, 2nd Edition, 2018.

21GE08 PRESCRIPTIVE ANALYTICS

3 0 0 3

UNIT 1: Lineage of Prescriptive Analytics

9 Hours

Introduction to prescriptive analytics –Descriptive vs Predictive vs Prescriptive analytics - Disciplines that contribute to prescriptive analytics – Machine Learning, Computer Vision, Natural Language Processing, Signal Processing, Image Processing- Need of global optimum solution in Business scenarios - Expert System

UNIT 2: Operation and Supply Chain Analytics

9 Hours

Route profitability analysis and optimization – Fleet management – Network planning — Network and capacity optimization – Capacity and pricing analysis - Monte carlo Simulation

UNIT 3: Exact Optimization

9 Hours

Linear programming -Integer programming – Dynamic programming – Constraint programming - Decision Analysis

UNIT 4: Heuristic-Meta Heuristics Optimization

9 Hours

Heuristic - Greedy algorithm for Travelling salesman problem; Meta Heuristic-Local search heuristic- Simulated annealing -Population-based metaheuristics-Evolutionary computations – Genetic algorithm

UNIT 5: Holistic Optimization

9 Hours

Multiple criteria decision making -Analytic Hierarchy process- Approximation Methods- Scalar Method – Aggregation – Weighted matrix eConstraint- Multi objective optimization— Goal programming - Pareto efficiency

Total: 45 Hours

Reference Books

1. Andre Milchman, Noah Fang, "Prescriptive Analytics: A Short Introduction to Counterintuitive Intelligence", CreateSpace Independent Publishing Platform, 2018.
2. DursunDelen, "Prescriptive Analytics: The Final Frontier for Evidence-Based Management and Optimal Decision Making", Pearson Education, 2019.
3. Gerard Blokdyk, "Prescriptive Analytics", CreateSpace Independent Publishing Platform, 2017.
4. James Evans, "Business Analytics", Pearson Publications, 2nd Edition, 2018.
5. Peter Bull, Carlos Centurion, Shannon Kearns, Eric Kelso,NariViswanathan, "Prescriptive Analytics for Business Leaders", Independent Publisher, 2017.

21GE09 PYTHON PROGRAMMING FOR ANALYTICS

3 0 0 3

UNIT 1 : Introduction to Python

9 Hours

Python Overview – Environment Setup – Jupyter Notebook –Working Directory - Syntax, comments, variables, datatypes - numbers, strings, Booleans, operators, lists, tuples, sets, dictionaries – Operators in Python – Branching statement in Python functions, lambda, array, classes, objects, python dates, string formatting

UNIT 2 : Python For Data Analysis

9 Hours

Python Libraries – Numpy – Vector and Matrix indexing, slicing, shape, reshape, joint split, sort filter, copy vs view - Random numbers; Pandas Library – Creating Dataframe, Slicing and Dicing the Data Frame, .loc and iloc, Adding Columns to Data Frame, Dropping Rows and Columns, Sorting Dataframe, Grouping the Data, Data cleaning and pre-processing

UNIT 3 : Data Visualization using Python

9 Hours

Matplotlib Library –Histogram, Scatter Plot, Pie Chart, Area Chart, Meshgrid, Quiver Plot, Contour Plot; Seaborn Library - Count Plot, Bar Plot, Point Plot, Violin Plot, Swarm Plot, Rug Plot, Cat plot; Introduction to Plotly – Animated plots

UNIT 4 : Model Building using Python

9 Hours

Statistical libraries for model building – Random forest, Support vector machines, Ensemble methods

UNIT 5 : TensorFlow

9 Hours

TensorFlow Basics – Introducing Tensors – Directed Graph – Visualizing a graph – Estimator API – Feature Extraction - Train a model – Simple programs in Tensor Flow - Deep learning with Tensorflow

Total: 45 Hours

Reference Books

1. Camm, Cochran, Fry, Ohlmann, Andeson, Sweeny, Williams, "Essentials of Business Analytics", Cengage Learning, 2019.
2. Nishant Shukla, "Machine Learning with Tensorflow", Manning Publications, 1st Edition, 2018.
3. Sebastian Raschka, VahidMirjalili, "Python Machine Learning", Packt Books, 2nd Edition, 2017.
4. Wes McKinney, "Python for Data Analysis: Data Wrangling with Pandas, Numpy and IPython", O'Reilly Media, 2nd Edition, 2017.
5. YehezkelS.Resheff, Itay Lider, "Learning with Tensorflow: A Guide to Building Deep Learning Systems", O'Reilly Media, 1st Edition, 2017.