UNIVERSITY OF DELHI

UNDERGRADUATE CURRICULUM FRAMEWORK– 2022 BASED ON NEW EDUCATION POLICY,2020

B.A (Vocational Studies) MATERIALS MANAGEMENT

SEMESTER- V

B.A. (VS) MATERIALS MANAGEMENT

DSC 5.1: Technology in Supply Chain Management
CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Technology in Supply Chain Management DSC 5.1	4	3	0	1	Pass in Class XII	NIL

Learning objectives

It is designed to provide students with a comprehensive understanding of how technology is transforming and improving supply chain operations. Students will learn about the latest technological advancements and their applications in various aspects of the supply chain, including procurement, logistics, inventory management, demand forecasting, and customer relationship management. It will cover both theoretical concepts and practical case studies to help students develop a strategic and practical approach to leveraging technology for supply chain optimization.

Learning outcomes

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

1. recognize the role of technology in enhancing supply chain management practices and also analyse the case studies to explore successful implementations of e-procurement and SRM systems.
2. analyse route optimization and fleet management solutions for effective transportation planning.
3. examine the integration of Customer Relationship Management (CRM) systems with the supply chain and analyse customer segmentation and personalization strategies in CRM.
4. evaluate the applications of Internet of Things (IoT) in supply chain management and analyse case studies on successful implementation of blockchain in supply chain management.
5. analyse big data analytics and predictive modelling techniques for supply chain optimization.

Unit 1: Introduction to Supply Chain Management and Technology 9 hours

Overview of supply chain management and its importance, Role of technology in supply chain management, Key technological trends shaping the industry, E-Procurement and Supplier Relationship Management, E-procurement systems and their benefits, Supplier relationship

management (SRM) and its significance, Case studies on successful implementation of e-procurement and SRM systems

Unit 2: Warehouse and Inventory Management Technologies 9 hours

Automated warehouse systems and robotics, Inventory management software and tool Just-in-Time (JIT) and Lean principles in inventory management, Transportation and Logistics Technologies, Transportation management systems (TMS), Route optimization and fleet management solutions, Tracking and tracing technologies for real-time visibility

Unit 3: Demand Forecasting and Analytics 9 hours

Statistical forecasting methods, Demand sensing and demand-driven planning, Predictive analytics and machine learning in demand forecasting, Customer Relationship Management (CRM) in the Supply Chain, CRM systems and their integration with the supply chain, Customer segmentation and personalization, Omni-channel customer experience management

Unit 4 Internet of Things (IoT) and Supply Chain Visibility 9 hours

IoT applications in supply chain management, Sensor technologies for real-time monitoring Achieving end-to-end supply chain visibility, Blockchain and Supply Chain Transparency, Introduction to blockchain technology, Blockchain applications in supply chain industry, Case studies on blockchain implementation in supply chain

Unit 5: **Artificial Intelligence (AI) and Machine Learning (ML) in Supply Chain 9 hours**

Role of technology in global supply chain operations, Internet of Things (IoT), blockchain, and artificial intelligence (AI) in supply chains. Big data analytics and predictive modelling for supply chain optimization, Supply chain visibility and collaboration platforms, AI and ML applications in supply chain optimization, Predictive maintenance and quality control using AI, Autonomous vehicles and drones in logistics. Case studies on autonomous delivery systems including Drones.

Exercises

The learners are required to:

1. discuss the case studies on successful implementation of e-procurement and SRM systems.
2. prepare a project on Route optimization and fleet management solutions for any company.
3. discuss the case on machine learning in demand forecasting.
4. be given case on Blockchain applications in supply chain industry.
5. dents will be able to prepare a case on use of Autonomous vehicles and drones in logistics.

Suggested readings

- Chopra, S., & Meindl, P. (2016). Supply chain management: Strategy, planning, and operation (6th ed.). Pearson.

- Chen, I. J., & Paulraj, A. (2004). Towards a theory of supply chain management: The constructs and measurements. Journal of Operations Management, 22(2), 119-150.
- Simchi-Levi, D., Kaminsky, P., & Simchi-Levi, E. (2019). Designing and managing the supply chain: Concepts, strategies, and case studies (4th ed.). McGraw-Hill Education.
- Ferdows, K., Lewis, M. A., & Machuca, J. A. D. (2003). Rapid-fire fulfilment. Harvard Business Review, 81(11), 104-110.
- Gunasekaran, A., Patel, C., & McGaughey, R. E. (2004). A framework for supply chain performance measurement. International Journal of Production Economics, 87(3), 333-347.
- Narasimhan, R., & Das, A. (2001). An empirical investigation of the antecedents and impact of e-business technology usage on small firms in the USA. European Journal of Information Systems, 10(2), 80-93.
- Sheffi, Y. (2018). The resilient enterprise: Overcoming vulnerability for competitive advantage. The MIT Press.
- Handfield, R. B., & Nichols, E. L. (2002). Introduction to supply chain management. Prentice Hall.
- Simatupang, T. M., & Sridharan, R. (2008). Design for supply chain collaboration. Business Process Management Journal, 14(3), 401-418.
- Lummus, R. R., Krumwiede, D. W., & Vokurka, R. J. (2001). The relationship of logistics to supply chain management: Developing a common industry definition. Industrial Management & Data Systems, 101(8), 426-431.
- Jacobs, F. R., Chase, R. B., & Lummus, R. R. (2013). Operations and supply chain management (14th ed.). McGraw-Hill Education.
- Hoek, R. I. V., & Harrison, A. (2008). Measuring the unmeasurable: The measurement of performance in the supply chain. International Journal of Operations & Production Management, 28(11), 1030-1054.
- Sodhi, M. S., & Tang, C. S. (2012). Managing supply chain risk. Springer.

Notes:

- **Suggested readings shall be updated and uploaded on the college website from time to time. Teachers may use free softwares available for SCM.**
- **Examination scheme and mode shall be prescribed by the Examination branch, University of Delhi from time to time.**

B.A. (VS) MATERIALS MANAGEMENT

DSC 5.2: FIRMS IN THE GLOBALISING WORLD
DISCIPLINE SPECIFIC CORE - (DSC, 5th Semester)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title and Code	Total Credits	Lectures	Tutorial	Practical	Eligibility criteria	Pre-requisites of the course
Firms in the Globalizing World (DSC 5.2)	**4**	**3**	**1**	**0**	**Class XII**	**Nil**

Learning Objectives: Globalization since the early 1990s has created a connected world and many firms participate in cross-border activities assisted by acceleration in the access to information and communication technology and the internet. This paper covers topics in contemporary international business comprising trade theory, trans-national corporations and their choice of the host country and entry modes. It covers the theoretical and empirical issues in trade and investment and risks of international business. The students will conceptually understand these topics and will also follow case studies. The course also brings out the consequences of globalization and internationalization of value chains for firms and the functioning of the international monetary and financial system including the determination of exchange rates, currency risks and financial crises.

Learning Outcomes: After the completion of the course the learners will be able to:

- Understand how and why firms internationalize in a globalized world. They will be able to appreciate the differences in the business environments in the domestic economy and in the foreign location.
- Understand the basis of trade and why firms locate production activity abroad either in full or in a segmented manner through value chains and learn about trade barriers and trade costs faced by firms when they enter the international market.
- Appreciate the pros and cons of economic integration in the context of international monetary and trade institutions. The students will also understand the basics of exchange rate determination, the international capital market and global financial crises.

Unit I. Globalization: Phases and dimensions of globalization and consequences of participation in the international economy, globalization of markets and firms, internationalization of value chains and cultural and ethical challenges in international business. Risks in international business. Causes and Types of country risks. Managing country risks. Opportunities and challenges of doing business in emerging markets. Role of the WTO, IMF and WB. **(10 hours)**

Unit II. International Trade and Investment, Comparative and competitive advantage, The strategies of

internationalizing firms to gain and sustain competitive advantage. Economies of scale and new trade theories. Gains from trade. Difference between inter and intra-industry trade.

Building a global firm and market entry strategies of a Transnational Firm - FDI and GVCs. Outsourcing, global sourcing, offshoring, re-shoring and supply chain management. Benefits and Risks. Types of FDI (Greenfield /brownfield (M&A)), choice of the host country and modes of entry. Risks, challenges and successful strategies of FDI into and from emerging markets.

(15 hours)

Unit III. Government intervention in international trade and investment: Causes, types and effects - tariffs, quotas, VERS, Subsidies, LCRs, etc. Firm-response to intervention - FDI - (horizontal and vertical), GVCs. Reasons for and benefits of Economic Integration - customs unions, FTAs/RTAs - trade creation and diversion. Examples - EU, NAFTA, RECP.

(10 hours)

Unit IV. International Monetary and Financial system: Foreign exchange market and Exchange rate determination - Asset market approach and the purchasing power parity approach, currency risks, capital flight and speculation. Exchange rate pass through and the J-curve effect of currency depreciation/appreciation. Modern Exchange rate regimes. Global financial system and monetary institutions and global financial crises.
(10 hours)

Practical Exercises:
The learners are required to:

1. Discussion - The role of cultural differences in the MNCs' decision to enter a host country market? The students can study different multinationals in the fast-food sector, in the automobile sector and in the consumer goods sector and see how they have altered their strategy in host countries and comment on its success/failure in doing so. (Unit 1).

2. Discussion - Highlight the role of various factors in the success of IT exports from India. (Unit 2).

3. Group Presentation - The class can be divided into groups and asked to make a presentation of various FTAs and the European Union to discuss the benefits and costs of economic integration. (Unit 3).

4. Fieldwork-based exercises - Use the examples of smart phones and automobiles/auto-components to understand the meaning of value chains. (Unit 1 & 3).

5. Group projects based on data collection from the internet - Study India's export-import structure and compare it with the structure of the BRICS. Is India's export structure in line with the trade theories studied? (Unit 1).

6. Project - Compare and contrast the causes of the various currency crises since the 1990s across Asia and Latin America. Use the data on current account balance and the exchange rates from the internet to see whether phases of rupee depreciation in India coincide with phases of an improvement in India's current account balance. Do you see a lagged effect? (Unit 4).

7. Group projects based on data collection from the internet - Collect data on the ease of doing business from the World Bank website and compare India with China and other emerging markets. (Unit 1).

Suggested Readings:

1. Cavusgil, S. T., Knight, G. and Riesenberger, J. (2020). *International Business: The New Realities*. Fifth edition (Global edition). London: Pearson.

2. Salvatore, D. (2013). *International Economics.* Eleventh Edition. USA: Wiley.

Additional Reading:

Krugman P. R., Obstfeld, M. and Melitz, M. J. (2018) *International Economics: Theory and Policy*. (11th edition). Pearson.

Notes:
1. Suggested readings shall be updated and uploaded on the college website from time to time.
2. Examination scheme and mode shall be prescribed by the Examination Branch, University of Delhi from time to time.

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B.A. (VS) MATERIALS MANAGEMENT

DSC: 5.3 BUSINESS ANALYTICS IN SCM
CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
BUSINESS ANALYTICS IN SCM (DSC: 5.3)	4	2	-	2	Pass in Class XII	Basics of Statistics

Learning Objective*:* To make students to learn data-driven decision making and learn the basics of the business analytics in logistics and supply management. To familiarise students with basics of predictive and prescriptive analytics in order to solve somebusiness problems using different types of data. Students should be able to solve business problems, analyse data sets using various relevantstatistical software packages, and interpret and effectively communicate the result

Learning outcomes:
After completion of the course, learners will be able to:

1. analyze data practices within the organization to identify opportunities for improvement.
2. recognize cultural barriers to data-driven decision making and propose solutions to overcome them. Apply the six steps of the data-driven decision-making model to solve business problems.
3. interact with MongoDB as a document store and understand the concept of graph stores and comprehend the key functions and utility of big data technologies, including Hadoop and MapReduce.
4. recognize the different ways data enters an organization and the forms it takes as it is stored and used.
5. differentiate and explain the three Vs of data (volume, velocity, variety) and their impact on analysis.

Unit 1: Disruptions in Business **9 hours**

Challenges: Identify hurdles to becoming a data-driven organization - Opportunities: Analyze data practices in the organization - Identify how data can benefit the organization - Distinguish how to be a proactive data practitioner, Introduction to Business Analytics: Role of Analytics for Data Driven Decision Making; Types: Descriptive Analytics, Predictive Analytics, and Prescriptive Analytics. Introduction to the concepts of Big Data Analytics, Web and Social Media Analytics. Overview of Machine Learning Algorithms. Introduction to relevant statistical

software packages and carrying out descriptive analysis through it.

Unit 2: Business analytics Pre- Requisites and Predictive analytics 9 hours

Business Analysis Principles: Identify the categories of analytical people - Distinguish and define roles and responsibilities of professionals in data analysis - Data Driven Decision Making: Identify cultural barriers - Distinguish solutions to cultural and cross-functional barriers - Identify six steps of the data-driven decision-making model.

Simple Linear Regression: Estimation of Parameters, validation of simple linear regression model, Coefficient of determination, Significance tests, Residual analysis, Confidence and Prediction intervals.Multiple Linear Regression: Interpretation of Partial regression coefficients, working with categorical variables, Multi-collinearity and VIF, Outlier Analysis, Auto-correlation, transformation of variables, variable selection in regression model building.

Unit 3: Business analytics Ecosystems 9 hours

Relational Databases: Nature of relational databases - Purpose of the SQL language – Key aspects of ACID - Meaning of ETL - Not Only SQL: Big data and other data storage tools - Interacting with MongoDB - Document stores and graph stores, Utility of Hadoop - Purpose of MapReduce - Statistical Tool, Machine Learning, and Data Visualization: Tools for statistical analysis – Python/ R - Purpose of machine learning - Visualization tools.
Logistic and Multinomial Regression: Logistic function, Estimation of probability using logistic regression, Omnibus Test, Wald Test, Hosmer Lemshow Test, Pseudo R Square.

Unit 4: Data life cycle management and Decision Trees 10 hours

Data Life Cycle: Identify the stages in the data life cycle - Data in the organization: Distinguish between ways that data enters the organization - Identify the forms data takes as it is stored and used within the organization.
Decision Trees: Introduction, Chi-Square Automatic Interaction Detection, Bonferroni Correction, Classification and Regression Tree, Gini Impurity Index, Entropy, Cost based splitting Criteria, Ensemble Methods, Random Forest.

Unit 5: Clustering and Requirement gathering 8 hours

Clustering: Introduction, Distance and Dissimilarity measures used in clustering, Quality and Optimal Number of clusters, Clustering Algorithms, K-Means clustering, Hierarchical Clustering Requirements gathering process: Analyze why requirement gathering process is critical to proper analysis - 3 V's of data: Distinguish between the ways data is consumed (the three V's of data) - Customer journey map: Understand how requirement gathering fits with the development of a customer journey map - Distinguish between the stages of the customer journey map

Practical Exercises

1. You are a data analyst working for a mid-sized retail company. The company has recognized the importance of becoming a data-driven organization to stay competitive in the market. However, they are facing several challenges in this transformation. As part of the analytics team, you are tasked with addressing these challenges and identifying opportunities for leveraging data practices to benefit the organization. Prepare and import data (financial data of companies, macroeconomic data, primary data collectedthrough questionnaires). Calculate and interpret descriptive statistics on R/Python

2. You have recently been hired as a business analyst for a large multinational company. Your role involves working with different teams and departments to analyze data and provide insights to support data-driven decision-making. However, you have noticed that there are cultural and cross-functional barriers within the organization that hinder the effective use of data and analytics. As a business analyst, it is crucial for you to understand the categories of analytical people, define the roles and responsibilities of professionals in data analysis, and identify solutions to overcome cultural barriers and promote data-driven decision-making.

3. Perform simple OLS regression on R/Python and interpret the results obtained. Test the assumptions of OLS (multicollinearity, autocorrelation, normality etc.) on R/Python.

4. You are working as a data analyst in a technology startup that collects and analyzes large amounts of data from various sources. Your role involves managing and analyzing data using relational databases, exploring alternative data storage tools, and utilizing statistical and machine learning techniques for data analysis and visualization. You are also responsible for selecting appropriate tools for statistical analysis and data visualization to effectively communicate insights to stakeholders.

5. You have recently joined a data management team in a large corporation. Your role involves understanding and managing the data life cycle within the organization. You need to have a clear understanding of the stages in the data life cycle, how data enters the organization, and the various forms data takes as it is stored and used within the organization. Apply and interpret the results of decision trees and clustering models on R and Python.

6. You have been assigned as a business analyst for a software development project that aims to create a new e-commerce platform. Your role involves gathering requirements from various stakeholders, understanding the characteristics of data consumption (the 3 V's of data), and aligning the requirement gathering process with the development of a customer journey map. Additionally, you need to have a clear understanding of the different stages of the customer journey map.

7. You are also required to perform regression analysis with categorical/dummy/qualitative variables on R/Python. Perform probabilistic regression models (logit and probit) along with validation tests andclassification table on R/Python

SUGGESTED READINGS:

- Chen, H., Chiang, R. H., & Storey, V. C. (Eds.). (2012). Business Intelligence and Analytics: From Big Data to Big Impact. Springer.
- Davenport, T. H., & Harris, J. G. (2017). Competing on Analytics: The New Science of Winning. Harvard Business Review Press.
- Evans, J. R., & Patton, R. J. (2020). Business Analytics: Methods, Models, and Decisions. Cengage Learning.
- Gupta, R. (2019). Business Analytics: Principles, Concepts, and Applications. Pearson.
- Kumar, U. D. (2017). Business Analytics: The Science of Data Driven Decision Making (1st ed.). Wiley India.
- Larose, D. T., & Larose, C. D. (Eds.). (2021). Data Science and Business Analytics with R. CRC Press.
- Mitra, S., & Singh, M. (2018). Big Data Analytics in Business. In S. Banerjee & C. Paul (Eds.), Handbook of Research on Big Data Analytics for Business (pp. 45-68). IGI Global.
- Shmueli, G., Bruce, P. C., Gedeck, P., & Patel, N. R. (2019). Data Mining or Business Analytics – Concepts, Techniques, and Applications in Python. Wiley.
- Mueller, A. C., & Guido, S. (2016). Introduction to Machine Learning with Python. O'Reilly Media, Inc.
- Provost, F., & Fawcett, T. (2019). Data Science for Business: What You Need to Know about Data Mining and Data-Analytic Thinking. O'Reilly Media.
- Winston, W. L., & Albright, S. C. (2017). Practical Management Science: Spreadsheet Modeling and Applications (6th ed.). Cengage Learning.
- Provost, F., & Kohavi, R. (Eds.). (2018). The Cambridge Handbook of Data Science. Cambridge University Press.
- Liu, J., & Motwani, R. (2019). Business Intelligence and Analytics. In A. Tucker (Ed.), Wiley StatsRef: Statistics Reference Online. Wiley.

Notes:

- **Suggested readings shall be updated and uploaded on the college website from time to time.**
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B.A. (VS) MATERIALS MANAGEMENT

DSE 5.1: Port Management

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Port Management DSE: 5.1	4	3	1	-	Pass in Class XII	NIL

Learning Objectives:

This course provides an in-depth understanding of the principles and practices of port management. Students will explore the various aspects of port operations, including terminal operations, cargo handling, port planning, logistics, and intermodal transportation. The course will also cover the regulatory and environmental considerations in port management, as well as emerging trends and challenges in the field.

Learning Outcomes

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

1. explain the role and importance of ports in global trade and transportation.
2. explain the key components of port management, including port planning, operations, and logistics.
3. analyze the challenges and trends in port management, including environmental sustainability and technological advancements.
4. evaluate the regulatory framework and policies impacting port operations.
5. apply relevant management principles and tools to optimize port efficiency and performance.
6. demonstrate knowledge of intermodal transportation and its integration with port operations.
7. assess the economic impact of ports on regional and national economies and develop critical thinking and problem-solving skills in the context of port management.

Unit 1: Introduction to Port Management **9 hours**

Definition and functions of ports, Historical development and significance of ports, Types of ports and their characteristics, Port governance and stakeholders, Port Planning and Infrastructure, Port master planning and design, Port site selection and development, Terminal layout and design Port infrastructure and superstructure.

Unit 2: Port Operations, Port Logistics and Cargo Handling 9 hours

Vessel operations and navigation, Terminal operations and equipment, Cargo handling techniques and technologies, Containerization and container terminals, Port Logistics and Supply Chain Management, Port-centric logistics and distribution, Intermodal transportation and hinterland connectivity, Port hinterland modeling and optimization, Supply chain integration and collaboration

Unit 3: Port Security and Safety 9 hours

Port security regulations and initiatives, Risk management and emergency response, Safety protocols and best practices, Security technology and surveillance systems, Environmental Sustainability in Port Management, Environmental challenges and impacts of port activities Green port initiatives and sustainability frameworks, Alternative energy sources for port operations, Waste management and pollution control,

Unit 4: Port Regulations and Policy Frameworks 9 hours

International conventions and agreements, National and regional port regulations, Port governance and regulatory bodies, Economic and trade policies affecting ports

Unit 5: Emerging Trends and Future Challenges in Port Management 9 hours

Digitalization and smart port technologies, Automation and robotics in port operations, Port-city integration and urban planning, Climate change and adaptation strategies, Analysis of real-world port management cases.

Exercise

1. Imagine you are tasked with designing a new port. Outline the key considerations and steps involved in the port master planning and design process. Select a specific type of port (e.g., container port, bulk port) and describe its characteristics in terms of infrastructure, operations, and cargo handling.
2. Investigate the various terminal operations and equipment used in modern ports. Compare and contrast different cargo handling techniques and technologies, highlighting their advantages and limitations.
3. Develop a risk management plan for a port, considering potential hazards and emergency scenarios. Outline the steps to be taken in case of a security breach or natural disaster.
4. Research and compare national and regional port regulations in different countries or regions. Identify key similarities and differences and discuss their implications for port management.
5. investigate the role of digitalization and smart port technologies in improving port efficiency and performance. Discuss the potential benefits and challenges associated with their implementation.

Suggested Readings

- Branch, A. E., & Wang, C. H. (Eds.). (2022). The Handbook of Maritime Economics and Business (2nd ed.). World Scientific Publishing.
- Slack, B. (2019). Shipping and Logistics Management (4th ed.). Kogan Page.
- Ducruet, C., & Notteboom, T. (Eds.). (2018). Ports in Proximity: Competition and Coordination among Adjacent Seaports. Edward Elgar Publishing.
- Monios, J., Wilmsmeier, G., & Lambert, B. (Eds.). (2019). Dry Ports - A Global Perspective: Challenges and Developments in Serving Hinterlands. Edward Elgar Publishing.
- Notteboom, T., & Rodrigue, J.-P. (Eds.). (2018). Ports and Networks: Strategies, Operations and Perspectives. Routledge.
- Ng, A. K. Y., & Yip, T. L. (2017). Port Management and Operations (3rd ed.). CRC Press.
- Song, D.-W., & Panayides, P. M. (2018). Maritime Logistics: A Complete Guide to Effective Shipping and Port Management (4th ed.). Kogan Page.
- Stopford, M. (2009). Maritime Economics (3rd ed.). Routledge.
- Talley, W. K. (2015). Port Economics. Routledge.
- Wilmsmeier, G., & Notteboom, T. (Eds.). (2018). The Routledge Handbook of Transport Economics. Routledge.

Notes:

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B.A. (VS) MATERIALS MANAGEMENT

DSE- 5.2: Global Supply Chain Management

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE, REQUISITES OF THE COURSE

Course Title & Code	Total Credits	Lectures	Tutorial	Practical	Eligibility criteria	Pre-requisite of the course
Global Supply Chain Management **DSE – 5.2**	4	3	1	-	**Class XII**	**Nil**

Learning Objectives: Global Supply Chain Management is a comprehensive course that provides students with a deep understanding of the complex and interconnected processes involved in managing supply chains on a global scale. The course covers key concepts, strategies, and best practices for effectively managing the flow of goods, information, and finances across international borders. Students will develop skills in analyzing, designing, and optimizing global supply chain networks, as well as in identifying and mitigating risks and challenges associated with global operations.

Learning Outcomes:

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

1. analyse and evaluate global supply chain strategies and their impact on organizational performance.
2. design and optimize global supply chain networks to enhance efficiency and responsiveness.
3. identify and mitigate risks and challenges in global supply chain operations.
4. apply ethical and sustainable practices in global supply chain management.
5. Communicate and collaborate effectively in cross-functional and cross-cultural supply chain teams.

Unit 1: Introduction to Global Supply Chain Management 12 hours

Overview of supply chain management, Key challenges and trends in global supply chains, Global supply chain dynamics and complexities, Role of global supply chain management in organizational success, Global Supply Chain Strategy: Global sourcing strategies and supplier management, Global distribution strategies and logistics management, Global demand management and customer service, Performance measurement and metrics in global supply chains

Unit 2: Designing Global Supply Chain Networks 9 hours

Network design considerations and decision-making, Distribution network configuration and optimization, Facility location and capacity planning in global operations, Cross-docking, hub-and-spoke, and direct delivery models

Unit 3: Managing Risks and Challenges in Global Supply Chains 8 hours

Risk assessment and mitigation strategies, Supply chain disruptions and business continuity planning, Managing geopolitical, regulatory, and cultural challenges, Sustainability and social responsibility in global supply chains

Unit 4: Ethical and Sustainable Practices in Global Supply Chain Management 8 hours

Ethical considerations in global supply chains, Sustainable supply chain strategies and practices, Corporate social responsibility and supplier compliance, Circular economy and reverse logistics in global supply chains.

Unit 5: Communication and Collaboration in Global Supply Chain Teams 8 hours

Cross-functional and cross-cultural collaboration, Effective communication strategies in global supply chains, Managing conflicts and negotiations in international contexts, Building and leading global supply chain teams

Exercises

1. Students will be Divided into small groups (3-4 members per group) and provide each group with a case study or scenario related to a global supply chain. The case study should include information on the company's products, markets, suppliers, distribution channels, and challenges faced in managing the global supply chain. Instruct each group to analyze the case study and discuss the following aspects:
    a. Overview of supply chain management: Identify and describe the key components and processes involved in the company's global supply chain.
    b. Key challenges and trends in global supply chains: Identify and discuss the major challenges and trends that the company is facing or likely to face in its global supply chain operations.
    c. Global supply chain dynamics and complexities: Analyze the complexities and interdependencies within the company's global supply chain, including factors such as transportation, inventory management, lead times, and coordination among various stakeholders.
    d. Role of global supply chain management in organizational success: Discuss how effective global supply chain management can contribute to the company's overall success and competitive advantage.

2. Company ABC is a multinational manufacturing company that produces and distributes automotive parts. The company operates in multiple countries and is looking to redesign its global supply chain network to improve efficiency, reduce costs, and enhance customer service. As a supply chain analyst, your task is to design an optimized supply chain network for Company ABC. Analyze the scenario and address the following aspects in your practical problem:

a. Network design considerations and decision-making:

I. Identify and explain the key factors that should be considered when designing a global supply chain network for Company ABC.
II. Discuss the trade-offs and challenges associated with network design decisions, such as transportation costs, lead times, inventory management, and customer service levels.

b. Distribution network configuration and optimization:

I. Propose an optimized distribution network configuration for Company ABC's global operations.
II. Justify your proposed configuration by considering factors such as demand patterns, product characteristics, production locations, and customer locations.
III. Discuss how your proposed network configuration can help improve efficiency, reduce costs, and enhance customer service.

c. Facility location and capacity planning in global operations:

I. Determine suitable locations for manufacturing plants, distribution centers (DCs), and warehouses in the proposed network configuration.
II. Explain the factors influencing facility location decisions, such as proximity to suppliers, customers, transportation infrastructure, and labor availability.
III. Discuss the capacity planning considerations for the chosen facilities, including storage capacity, production capacity, handling capacity, and potential future expansion.

d. Cross-docking, hub-and-spoke, and direct delivery models:

I. Evaluate the suitability of cross-docking, hub-and-spoke, and direct delivery models for Company ABC's global supply chain.
II. Compare and contrast the advantages, disadvantages, and operational requirements of each model.
III. Recommend the most appropriate model(s) based on Company ABC's requirements and explain the rationale behind your recommendation.

3 Company XYZ is a multinational food and beverage company that operates a global supply chain. They source raw materials from various countries, manufacture products in multiple locations, and distribute them to retail stores worldwide. As a supply chain manager at Company XYZ, you have been tasked with assessing potential risks and developing mitigation

strategies for their global supply chain operations. This application-based question requires students to analyze the given scenario, think critically, and apply their knowledge of risk assessment, mitigation strategies, supply chain disruptions, business continuity planning, geopolitical challenges, and sustainability in global supply chains. Encourage students to provide detailed justifications and practical recommendations based on the specific context of Company XYZ. Students need to:

a) Assess the geopolitical, regulatory, and cultural challenges that Company XYZ may encounter in its global supply chain operations.

b) Propose strategies to address and manage these challenges effectively. Consider factors such as political stability, trade regulations, cultural differences, and compliance requirements.

c) Discuss how building strong relationships with local stakeholders, engaging in cross-cultural training, and fostering effective communication can help overcome these challenges.

4. Students are required to answer following questions based on above case regarding Sustainability and Social Responsibility in Global Supply Chains:

a) Analyze the importance of sustainability and social responsibility in global supply chain management for Company XYZ.

b) Identify specific sustainability and social responsibility issues that are relevant to the company's supply chain operations.

c) Propose strategies to integrate sustainability practices, such as reducing carbon emissions, promoting ethical sourcing, and supporting local communities, into Company XYZ's global supply chain.

5. Students may be given assignment on the Managing conflicts and negotiations in international contexts with the help of some company.

Suggested Readings

- Bolumole, Y. A., & Frankel, R. (2019). The Impact of Supply Chain Disruptions on Firm Financial Performance. Journal of Business Logistics, 40(2), 160-175. https://doi.org/10.1111/jbl.12197
- Chopra, S., & Meindl, P. (2021). Supply Chain Management: Strategy, Planning, and Operation (8th ed.). Pearson.
- Christopher, M. (2016). Logistics and Supply Chain Management: Creating Value-Adding Networks (5th ed.). Pearson.
- Council of Supply Chain Management Professionals. (n.d.). Supply Chain Management Definitions and Glossary. Retrieved from https://cscmp.org/CSCMP/Educate/SCM_Definitions_and_Glossary_of_Terms/CSCMP/Educate/SCM_Definitions_and_Glossary_of_Terms.aspx

- Coyle, J. J., Langley Jr., C. J., Gibson, B. J., & Novack, R. A. (2019). Supply Chain Management: A Logistics Perspective (10th ed.). Cengage Learning.
- Ivanov, D., & Dolgui, A. (2017). A taxonomy of supply chain coordination approaches. In IFAC-PapersOnLine (Vol. 50, No. 1, pp. 9393-9398). Elsevier. https://doi.org/10.1016/j.ifacol.2017.08.1445
- Simchi-Levi, D., Kaminsky, P., & Simchi-Levi, E. (2014). Designing and Managing the Supply Chain: Concepts, Strategies, and Case Studies (3rd ed.). McGraw-Hill Education.
- Monczka, R. M., Handfield, R. B., Giunipero, L. C., & Patterson, J. L. (2020). Purchasing and Supply Chain Management (7th ed.). Cengage Learning.

Notes:

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B.A. (VS) MATERIALS MANAGEMENT

DSE 5.3: Revenue Management and Financial Essentials

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE, REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Revenue Management and Financial Essentials **DSE: 5.3**	**4**	**3**	**1**	**-**	**Pass in Class XII**	**NIL**

Learning Objectives:

This course will be aim at understanding the importance of revenue management and financial management in the logistics and supply chain. They will learn to develop effective pricing strategies and revenue optimization techniques. They will understand forecasting techniques and tools for demand analysis and will also learn how to perform financial analysis and use financial ratios for decision making. Students will develop skills in budgeting and financial planning for logistics and supply chain operations.

Learning outcomes:

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

- develop a plan for implementing revenue management and financial management strategies in a logistics and supply chain operation, considering factors such as competition, seasonality, and customer behavior.
- apply pricing strategies and revenue optimization techniques to a case study of a logistics and supply chain business, analyzing the impact on revenue, customer satisfaction, and market share.
- use demand forecasting tools to analyze the impact of different scenarios on a logistics and supply chain business, such as changes in pricing, marketing, and customer segmentation.
- analyze financial statements and perform cost accounting for a logistics and supply chain business, identifying areas for improvement and making recommendations for cost reduction and revenue enhancement. Student will be able to prepare a cost sheet.

- analyze financial data for a logistics and supply chain business and use financial ratios to make decisions related to pricing, marketing, investment, and resource allocation.
- develop a budget and financial plan for a logistics and supply chain business, considering factors such as capital expenditures, operating costs, revenue projections, and risk management.

Unit 1: Introduction to Revenue Management and Financial Management 9 hours

Definition and Importance of Revenue Management and Financial Management in Logistics and supply chain, Differences between Revenue Management and Financial Management, Revenue Management in Logistics and supply chain: Key Concepts and Strategies, Financial Management in Logistics and supply chain: Key Concepts and Strategies

Unit 2: Pricing Strategies and Revenue Optimization 6 hours

Types of Pricing Strategies, Setting Prices in Logistics and supply chain, Revenue Optimization Techniques, Managing orders and supplies.

Unit 3: Forecasting and Demand Analysis 10 hours

Forecasting Techniques for Logistics and supply chain Demand, Tools for Demand Analysis, Seasonality and Its Impact on Revenue Management, different types of budgets, Forecasting and Budgeting in Logistics and supply chain, Forecasting Techniques, Budgetary control

Unit 4: Financial Analysis and Budgeting 10 hours

Understanding Financial Statements, Cost Accounting and Its Importance, cost concepts, classification of cost, components of cost and preparation of cost sheet, CVP analysis, Financial Analysis and Ratios, Budgeting and Financial Planning,

Unit 5: Practical Applications of Revenue and Financial Management Concepts 10 hours

Case Studies on Revenue Management and Financial Management in Logistics and supply chain, Application of Revenue Management and Financial Management Principles in Logistics and supply chain Operations, Challenges and Opportunities in Revenue Management and Financial Management in Logistics and supply chain, Key Performance Metrics for Revenue Management and Financial Management, Ethical Considerations in Revenue Management and Financial Management, Sustainability and Its Impact on Revenue Management and Financial Management

Exercises:

1. You are the revenue manager of a production company that caters to business to business. Develop a plan for implementing revenue management and financial management strategies that will increase revenue and profitability for the company. Consider factors

such as competition, seasonality, and customer behavior. Include specific strategies for pricing, inventory management, and distribution channels.

2. You are the revenue manager of retail company that specializes in fast delivery. Use demand forecasting tools to analyze the impact of different scenarios on the business, such as changes in pricing, marketing, and customer segmentation. Develop a demand forecast for the next six months and adjust your pricing and marketing strategies accordingly.
3. You are the financial manager of a manufacturing company that specializes in manufacturing of electrical goods. Analyze the financial statements of the company and prepare a cost sheet for production of fans. Identify areas for improvement and make recommendations for cost reduction and revenue enhancement.
4. You are the financial analyst of a manufacturing company that is expanding internationally. Analyze financial data for the chain and use financial ratios to make decisions related to pricing, marketing, investment, and resource allocation. Develop a report that outlines your findings and recommendations.
5. You are the financial planner of a logistics and supply chain business that is launching a new product line. Develop a budget and financial plan that takes into account factors such as capital expenditures, operating costs, revenue projections, and risk management. Use sensitivity analysis to assess the impact of different scenarios on the financial performance of the business.

Suggested Readings:

- Agnihotri, S. (2022), Financial analysis and reporting, A.K. Publications. New Delhi.
- Kasavana, M. L., & Brooks, R. M. (2016). Managing Front Office Operations. American Hotel & Lodging Educational Institute.
- Hayes, D., & Miller, A. (2011). Revenue management for the hospitality industry. John Wiley & Sons.
- Jin, N., & Lee, S. (2018). Financial management for hospitality decision makers. Routledge.
- Kasavana, M. L., & Brooks, R. M. (2016). Managing Front Office Operations. American Hotel & Lodging Educational Institute.
- Kimes, S. E. (2016). Hospitality revenue management. American Hotel & Lodging Educational Institute.
- Laudon, K. C., & Laudon, J. P. (2016). Management information systems: Managing the digital firm. Pearson.
- Singh, S. (2023). Cost accounting. Kitab mahal, New Delhi
- Singh, S. (2016). Management accounting, PHI learning. New Delhi.
- Singh, S. & Kaur, R. (2022). Basic Financial management. Scholar Tech. New Delhi.
- Singh, S.K. & Gupta, L. (2023) Basic management accounting. A.K. Publications. New Delhi.

Notes:

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PUBLIC POLICY AND GOVERNANCE

DSE 5.4: DISCIPLINE SPECIFIC ELECTIVE COURSE – (DSE-5th Semester)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Total Credits	Lectures	Tutorial	Practical	Eligibility criteria	Pre- requisite of the course
Public Policy and Governance (DSE 5.4)	4	3	1	0	Class XII	Nil

Learning Objectives: This course is designed to provide working knowledge of policy making actors and processes. It will provide knowledge on good governance and governing agencies at different levels. It explains basic concepts of Public policy and governance. The course also provides a comprehensive view of major Public policies and discusses the role of the state in the economy. It also discusses the role of public policy and governance in the globalized world. It analyses various policies adopted by Indian government for socio economic development of the country.

Learning Outcomes: After completion of the course, learners will be able to:

- Recognise the essential elements of public policy and governance.
- Identify and describe principles of Governance and the process of public policy making.
- Demonstrate an understanding of various economic and financial policies of the government and will be able to understand its impact on the people.
- Use the theoretical knowledge provided by the paper to analyse India government's policy decisions and their impact on society and the economy.
- Understand and evaluate changes in public policy in a globalizing world

Unit 1: Nature, Scope and Importance of Public Policy, Instruments of public policy, Theories of Public Policy Making, good governance: Agency theory, Principles of good governance.

(12 hours)

Unit 2: The economics and Finance of Public Policy, Fiscal Policy, Monetary Policy, Budget Process, Macroeconomic policy.

(12 hours)

Unit 3: Globalization and Public Policy, Transnational Actors: Impact on Public Policy Making, Impact of Globalization on Policy Making, Global governance system: UN, World Bank, IMF, WTO

(12 hours)

Unit 4: Governance and Public Policy in India, Public policy for socio economic development: NREGA, NRHM, Grass root governance, e-governance, Reforming Institutions: The State, Market and Public domain

(12 hours)

Practical Exercises:
The learners may do the following:

1. Organize classroom debates on public policies, the Role of the state etc
2. Design a policy blueprint in a group of two to four. The students may choose the topic in consultation with the course instructor, and the policy can be presented in class for discussion.
3. Conduct mock Youth Parliament debate. The topic may be assigned by the course instructor.
4. Visit the local governing body (Panchayat/Municipal body) to understand its' functioning and role in public life.

Suggested Readings:

- Anderson, J. E., Moyer, J., & Chichirau, G. (2022). *Public policymaking*. Cengage Learning.
- Ayyar, R. V. (2009). *Public policymaking in India*. Pearson Education India.
- Birkland, T. A. (2019). *An introduction to the policy process: Theories, concepts, and models of public policy making*. Routledge
- Chakrabarti, R & Sanyal, K (2017). *Public Policy in India*. Oxford University Press.
- Puri, V.K.& Misra, S.K (2022). *Indian Economy.* Himalaya Publishing House.
- Singh, A.P. & Murari, K. (2018). *Governance: Issues and Challenges*. Pearson

Notes:

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2. Examination scheme and mode shall be prescribed by the Examination branch, University of Delhi from time to time.

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DSE 5.5: Productivity Management

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Productivity Management DSE: 5.5	4	3	1	-	Pass in Class XII	NIL

Learning objectives

Productivity Management is a comprehensive course designed to equip students with the knowledge and skills necessary to enhance productivity in various contexts, including personal, professional, and organizational settings. The course explores key concepts, techniques, and strategies that enable individuals and teams to optimize their efficiency, effectiveness, and output. Through a combination of theoretical frameworks, case studies, practical exercises, and group discussions, students will develop a solid foundation in productivity management principles and learn how to apply them to real-world scenarios.

Learning outcomes:

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

1. explain the concept of productivity and its significance in personal and organizational contexts. They will also be able to identify factors that influence productivity and evaluate their impact.
2. apply productivity management techniques to enhance personal and team performance.
3. analyze productivity challenges and develop strategies to overcome them.
4. Utilize time management techniques to optimize efficiency and effectiveness. Foster a culture of productivity and continuous improvement within an organization.
5. Evaluate the role of technology in productivity management and leverage appropriate tools. Develop skills in prioritization, goal setting, and task management.
6. Enhance decision-making processes to support productivity goals. Apply effective communication and collaboration strategies to maximize productivity.

Unit 1: Introduction to Productivity Management **9 hours**

Definition and significance of productivity, Factors influencing productivity, Productivity measurement and metrics. Personal Productivity Enhancement, Time management techniques,

Prioritization and goal setting, Effective task management, managing distractions and improving focus

Unit 2: Team Productivity Optimization and Productivity Challenges 9 hours

Team dynamics and collaboration, Delegation and empowerment, Effective meetings and communication, Conflict resolution and problem-solving, Procrastination and motivation, Stress management and work-life balance, Burnout prevention strategies. Handling interruptions and managing workflow

Unit 3: Technology and Productivity 9 hours

Utilizing productivity tools and software, Automation and process improvement, Data analysis and decision-making, Managing digital distractions and information overload, technological challenges and adoption of new technology.

Unit 4: Productivity in Specific Contexts 9 hours

Productivity management in remote work environments, Project management and resource allocation, Productivity in service industries, Productivity in creative and knowledge-based work, Responsible use of technology in productivity management

Unit 5: Creating Productive Organizational Culture, Ethical Considerations 9 hours

Organizational structures and systems, Performance measurement and feedback, Continuous improvement methodologies (e.g., Lean, Six Sigma), Employee engagement and motivation, Balancing productivity and work-life ethics, Equity, diversity, and inclusion in productivity practices.

Exercise

The learners are required to:

1. visit any factory and prepare a report on Factors influencing productivity and Productivity measurement.
2. study case studies and group projects to analyze real-world productivity challenges.
3. to give presentations on the role process Automation and process improvement in any industry of their choice.
4. give presentations or reports on productivity improvement and Productivity management strategies in remote work environments.
5. discuss on Balancing productivity and work-life ethics, where students can do role playing.

Suggested readings

- Adams, S. (2019). Productivity Now: Proven Strategies to Maximize Your Time, Crush Your Goals, and Achieve Success. HarperCollins.

- Baker, D. M. (Ed.). (2021). Productivity and Performance Improvement in Organizations: Concepts, Methods, and Applications. Routledge
- Brown, A. M. (Ed.). (2021). Advances in Productivity Management: Strategies for Organizational Efficiency. Springer.
- Garcia, M., Thompson, L., & Davis, E. (2018). Productivity in the Digital Age. In R. Lewis (Ed.), Contemporary Approaches to Productivity Management (pp. 87-108). Palgrave Macmillan.
- Gupta, R., Patel, S., & Lee, K. (2018). Innovative Approaches to Productivity Management. In S. Mitchell (Ed.), Advances in Productivity: Theory and Practice (pp. 112-134). Springer.
- Harris, S. (2017). Time Management Techniques for Productivity Improvement. In A. Anderson (Ed.), Enhancing Workplace Productivity: Strategies and Tools (pp. 45-68). Routledge.
- Johnson, P. W., & Collins, M. J. (2020). Productivity Strategies: Unlocking the Power of Effective Time Management. Wiley.
- Kumar, A. (2017). Technology Integration for Productivity Enhancement. In M. Davis (Ed.), Transforming Workplaces: Strategies for the Digital Era (pp. 67-89). Palgrave Macmillan.
- Mullins, L. J. (2019). Productivity Management: A Comprehensive Guide to Enhancing Efficiency and Performance. McGraw-Hill Education.
- Smith, J., & Johnson, R. (2020). The Productivity Paradox: How to Unlock Your Potential and Accomplish More. Random House.

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B.A. (VS) MATERIALS MANAGEMENT

GE 5.1: Introduction to Materials Management

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE, REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Introduction to Materials Management GE: 5.1	**4**	**3**	**1**	**-**	**Pass in Class XII**	**NIL**

Learning objectives: This subject will to introduce conceptual framework of material management and can manage the material management process. They will understand and get familiarize internal and external of material management, material management activities, functions and organizational structure.

Learning Outcomes: After completion of the course, Students will be able to

- discuss the conceptual framework of material management and can manage the material management process.
- explain both internal and external of material management, material management activities, functions and organizational structure;
- explain production processes, machines and tools used in industries.
- analyze the dynamics of inventory management's principles, concepts, and techniques as they relate to the entire supply chain.
- explain familiarize themselves with inventory management practices and perform the material handling equipment in the stores.

Unit1: Materials Management and its linkages **9 hours**

Meaning and Scope, Functions of Materials Management, Objectives and Significance of Materials Management. Interfaces of Materials Management: Internal and external interfaces, Organization of Material Management, Integrated materials management system and its advantages. Linkages with other functional areas of Management i.e. Production, Accounting and Finance, Marketing, Information Technology, Total Quality Management.

Unit2: Materials Planning and Budgeting **9 hours**

Introduction, Management of Production and Manufacturing, Types of Industries, Manufacturing Planning and Control, Materials Management in Manufacturing and Process Industries , Materials Planning and Budgeting in Continuous Process Industries; Broad categories of production processes used in industries. Productivity plan, commonly used machines and tools in industries.

Unit 3: Purchasing **9 hours**

Purchasing in Materials management, system concept, purchasing and procurement activities under Materials management, Value Analysis and value Engineering, Purchasing and quality Assurance, Purchase Cycle, Negotiation & Bargaining , Vendor relations, Purchasing Methods.

Unit 4: Inventory **9 hours**

Need of Inventory, Types of Inventory, Characteristics of Inventory, Components of Inventory, Inventory Functionality, Some basic tools and techniques of Inventory Management, Planning the Inventory Resource, Material Requirement Planning (MRP), Advantages over conventional planning (Order Point Method) , Input and output of MRP system.

Unit 5: Materials handling and storage systems **9 hours**

Material handling in stores, Principles of Materials Handling system, Materials Handling Equipment, Safety issues, Physical distribution logistics, physical control of stocks: obsolete, surplus and scrap Management, Layout of stores and warehouse.

Practical Exercise

1. You have recently been appointed as the Materials Manager in a manufacturing company. Your role involves understanding the meaning and scope of Materials Management, its functions, objectives, significance, and various interfaces within and outside the organization. Additionally, you need to comprehend the organization of Materials Management, the integrated materials management system, and its linkages with other functional areas of management. Prepare a explainatorty note to be presented to Director operations.

2. You are a production manager in a manufacturing company that operates in the process industry. Your role involves managing production processes, materials, and resources to ensure efficient manufacturing operations. You are responsible for manufacturing planning and control, materials management, materials planning and budgeting, as well as overseeing the productivity plan and utilization of machines and tools. You are required to prepare a report for presentation to MD

3. As a materials management professional, you are tasked with analyzing the purchasing function within the broader context of materials management. Using

your knowledge of purchasing and procurement activities, value analysis and value engineering, purchasing and quality assurance, and inventory management, critically evaluate the impact of effective purchasing on the overall materials management system. You need to prepare report Discussing purchasing in materials management and its role in the procurement process. Analyze the key activities involved in purchasing, including supplier selection, price negotiation, contract management, and vendor evaluation.

4. You have been appointed as the inventory manager in a manufacturing company. Apply your knowledge of the need for inventory, types of inventory, characteristics of inventory, components of inventory, and basic tools and techniques of inventory management to address the issue that ABC Manufacturing is experiencing challenges in managing its inventory effectively. The company has identified issues with stockouts, excess inventory, and inefficient replenishment processes. As the inventory manager, you have been tasked with analyzing the inventory situation and proposing improvements using various inventory management techniques.

5. You have been appointed as the warehouse manager for a large retail organization. Apply your knowledge of material handling in stores, principles of materials handling systems, materials handling equipment, safety issues, physical distribution logistics, physical control of stocks, and layout of stores and warehouses to address the issue that XYZ Retail operates a central warehouse that receives, stores, and distributes a wide range of products to its retail stores across the country. The company is experiencing challenges in optimizing its material handling processes, ensuring warehouse safety, managing obsolete and surplus stocks, and improving the layout of its stores and warehouse. As the warehouse manager, you have been tasked with analyzing the situation and proposing improvements using effective material handling practices.

Suggested Readings

- Arnold, J. R. T., Champman, S. N., & Ramakrishnan, S. R. (2017). Introduction to Materials Management. Pearson Education, Inc.
- Dutta, A. K. (2013). Materials Management: Procedures, Text and Cases. Prentice Hall of India Pvt. Ltd., New Delhi.
- Gopalakrishnan, P., & Sundareson, M. (2006). Materials Management: An Integrated Approach. Prentice Hall of India Pvt. Ltd., New Delhi.
- Pooler, V. H. (1997). Purchasing and Supply Management: Creating the Vision. Chapman Hall.
- Shah, N. M. (2000). An Integrated Concept of Materials Management. Indian Institute of Materials Management, Baroda Branch, Baroda.
- Sharma, S. C. (2008). Material Management and Materials Handling. Khanna Publishers, New Delhi.
- Varma, M. M. (2015). Essentials of Storekeeping and Purchasing. Sultan Chand and Sons, New Delhi.

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B.A. (VS) MATERIALS MANAGEMENT

GE 5.2: Basics of Purchase Management

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE, REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Basics of Purchase Management **GE: 5.2**	**4**	**3**	**1**	**-**	**Pass in Class XII**	**NIL**

Learning objectives: The objectives of the course are to provide the understanding of different concepts of purchase management and equip the students about purchasing and its systems and procedures. It will also give understanding of price forecasting, special purchase systems, pubic buying and online purchasing/buying.

Learning Outcomes: After completion of the course, learners will be able to:

1. explain the conceptual framework of purchase management.
2. perform the procedure for purchase of materials from private and Government sources
3. define special purchase systems and conduct price forecasting for purchasing the material.
4. explain the procedure of online purchasing, government purchasing and its current practices

Unit 1 Introduction to Purchase Management 12 hours

Introduction, importance and functions of purchase Department, Organization for purchase function, centralized and decentralized purchasing, objectives of purchasing i.e. 6 R's of purchasing. Buyer- seller Relationship: Importance of good buyer-seller relationship, Relation with supplier-policies and issues in relationship, Ethical issues in purchasing.

Unit 2 Source and Procedure for purchase 12 Hours

Sources of supply: vendor selection and rating, Material specifications, Pre-purchase considerations, standard purchase procedure, post-purchase issues. Standard form used in purchasing like purchase requisition, tender / quotation documents, schedule of quotations, purchase order, follow-up order, cancellation of order, Bill of Materials etc.

Unit 3 Special Purchase Systems and Price Forecasting 12 Hours

Special Purchase Systems and Price Forecasting: (a) Special Purchase Systems: Forward Purchase, Tender purchase, Blanket order, zero stock, Rate contract, Purchases of capital equipment and leasing. (b) Price Forecasting: Price and pricing impact, price practices, price negotiations hard

bargaining and fixing. Purchasing under fluctuating prices, purchasing under uncertainty, Negotiations regarding quality

Unit 4 Online and International Purchase **9 hours**

Online Purchasing: Concept, advantages, procedure of online purchasing and current online purchase practices. International Purchasing: Need for International Purchase, Direct and Indirect Buying, term of payments and Legal-Framework of International Purchasing. The eProcurement System of India, Gem portal

Practical exercise

1. ABC Company is a manufacturing organization that specializes in producing electronic devices. The company has recently recognized the need to establish a dedicated purchase department to streamline its procurement activities. As the newly appointed manager of the purchase department, you are tasked with understanding and implementing key concepts related to purchasing. you need to Analyze the importance of having a well-structured purchase department within ABC Company. How can an organized purchase department contribute to the overall success of the organization?
2. XYZ Manufacturing Company is a leading manufacturer of industrial machinery. As the procurement manager of XYZ Manufacturing, you are responsible for ensuring the smooth sourcing and procurement of materials and services for the company. You are currently facing challenges in managing various aspects of the purchasing process, including vendor selection and rating, material specifications, pre-purchase considerations, standard purchase procedures, and post-purchase issues. Evaluate the importance of effective vendor selection and rating for XYZ Manufacturing Company. Discuss the criteria and factors that should be considered when selecting vendors. How can vendor rating systems help in the decision-making process?
3. XYZ Company operates in an industry where prices for raw materials frequently fluctuate. Explain how the use of forward purchase as a special purchase system can help XYZ Company mitigate the impact of price volatility. Discuss the advantages and challenges associated with forward purchasing in such a market environment. In the context of purchasing capital equipment, analyze the advantages and disadvantages of leasing as a special purchase system for XYZ Company. Compare the financial implications of leasing versus outright purchase and discuss the factors that should be considered when deciding between the two options.
4. XYZ Corporation is considering implementing online purchasing as part of their procurement strategy. Discuss the concept of online purchasing and its advantages for XYZ Corporation. Provide examples of specific situations where online purchasing can offer significant benefits over traditional purchasing methods. Prepare the step-by-step procedure that XYZ Corporation should follow to successfully conduct online purchasing.

Suggested Readings

- Bailky, P., & Farmer, D. (Year). Purchasing Principles and Techniques. Pitman.
- Chunawalla, S.A. (Year). Materials and Purchase Management. Himalaya Publishing House.

- Dutta, A.K. (Year). Materials Management: Procedures, Text and Cases. Prentice Hall of India Pvt. Ltd.
- Gopalakrishnan, P., & Sundareson, M. (Year). Materials Management: An Integrated Approach. Prentice Hall of India Pvt. Ltd.
- Shah, N.M. (Year). An Integrated Concept of Materials Management. Indian Institute of Materials Management, Baroda Branch, Baroda.
- Sharma, S.C. (Year). Material Management and Materials Handling. Khanna Publishers.
- Pooler, V.H. (Year). Purchasing and Supply Management: Creating the Vision. Chapman & Hall.
- Lee, L., & Dobler, D.W. (Year). Purchasing and Materials Management. McGraw Hill.
- Zenz, G.J. (Year). Purchasing and the Management of Materials. John Wiley
- https://www.india.gov.in/spotlight/government-e-marketplace-procurement-made-smart#tab=tab-1

Notes:

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B.A. (VS) MATERIALS MANAGEMENT

DSC 6.1: Supply Chain Risk Management

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Supply Chain Risk Management **DSC: 6.1**	4	3	1	-	Pass in Class XII	NIL

Learning Objectives:

This course provides an in-depth exploration of supply chain risk management, focusing on identifying, assessing, and mitigating risks in a global supply chain environment. Students will learn about various types of risks, such as disruptions, demand fluctuations, supplier failures, geopolitical risks, and natural disasters, and develop strategies to manage and mitigate these risks. The course will also cover the role of technology and data analytics in supply chain risk management.

Learning Outcomes:

By the end of this course, students will be able to:

1. Discuss the concept of supply chain risk management and its importance in modern business operations.
2. classify different types of supply chain risks and their potential impact on business performance.
3. analyze and assess supply chain risks using appropriate tools and techniques and develop effective strategies to mitigate and manage supply chain risks.
4. evaluate the role of technology, data analytics, and decision support systems in supply chain risk management.
5. apply supply chain risk management principles to real-world business scenarios and case studies and communicate and present supply chain risk management strategies and findings effectively.

Unit 1: Introduction to Supply Chain Risk Management **12 hours**

Definition and importance of supply chain risk management, Key objectives and benefits of effective risk management, Supply chain risk management framework and process, Types of Supply Chain Risks, Internal and external risks, Demand-related risks, Supply-related risks , Operational and process risks, Financial and market risks, Geopolitical and regulatory risks, Environmental and sustainability risks

Unit 2: Risk Identification and Assessment **9 hours**

Risk identification techniques (brainstorming, checklists, scenario analysis), Risk impact and probability assessment, Risk mapping and prioritization, Risk Mitigation Strategies, Risk avoidance, transfer, and sharing, Reducing vulnerability and increasing resilience, Supply chain design and redundancy, Supplier relationship management and collaboration, Business continuity planning

Unit 3: Technology and Data Analytics in Supply Chain Risk Management **9 hours**

Role of technology and automation, Automated data collection: Technology facilitates the collection of real-time data from various sources within the supply chain, such as IoT sensors, RFID tags, and barcode scanners. Workflow automation: Technologies like robotic process automation (RPA) and artificial intelligence (AI) Data collection, analysis, and visualization, Predictive analytics and early warning systems, Supply chain digitization: Digital platforms and tools enable the integration and collaboration of different supply chain stakeholders, enhancing communication and visibility. Supply chain visibility and traceability, Case Studies in Supply Chain Risk Management

Unit 4: supply chain disruptions and Sustainable supply chain risk management **9 hours**

Analyzing and discussing real-world examples of supply chain disruptions and their impact, examining successful risk management strategies employed by organizations, Lessons learned and best practices in supply chain risk management, Emerging Trends in Supply Chain Risk Management, Sustainable supply chain risk management, Reshoring and nearshoring as risk mitigation strategies, Cybersecurity and data protection, Supply chain risk management in the era of artificial intelligence and blockchain technology

Unit 5: Application and Integration supply chain risk management principles **6 hours**

Applying supply chain risk management principles to simulated scenarios, Integrating risk management with other supply chain functions, Developing a comprehensive risk management plan.

Exercise

1. A pharmaceutical company must comply with stringent regulations imposed by different countries where it operates. Failure to comply with these regulations can lead to fines, product recalls, and reputational damage. Identify and classify the type of risk the pharmaceutical company is facing, and discuss the importance of understanding geopolitical and regulatory risks in supply chain risk management.

2. A global manufacturing company sources raw materials from multiple suppliers located in different countries. Due to recent geopolitical tensions, the company is facing disruptions in the supply of critical materials. Identify and classify the type of risk this company is facing, and explain how it fits into the supply chain risk management framework.

3. Examine how a retail company used predictive analytics and early warning systems to anticipate and mitigate risks associated with sudden shifts in consumer preferences or market trends. Analyze how a global manufacturing company successfully mitigated supply chain risks by implementing a data analytics platform that provided real-time visibility into demand, inventory, and production capacity. where a company leveraged technology and automation to respond swiftly to a major supplier disruption, ensuring minimal disruption to its own operations and customers.

4. Explore a case study where an organization successfully managed a supply chain disruption by implementing a robust risk management strategy, such as having alternative suppliers or diversifying its sourcing locations. how effectively it collaborated with its supply chain partners to mitigate risks and ensure business continuity during a disruptive event.

5. XYZ Manufacturing is a global company that specializes in producing electronic components. The company sources raw materials from multiple suppliers and distributes its products to customers worldwide. XYZ Manufacturing aims to enhance its supply chain resilience and mitigate potential risks. The company faces several supply chain risks, including supplier disruptions, transportation delays, and quality issues. To address these challenges, suggest plans to XYZ Manufacturing decides to integrate supply chain risk management principles into its operations. You are required to e challenges.

Suggested readings

- Choi, T. Y., & Behdani, B. (2013). Managing Risks in Supply Chains: How to Build Reliable Collaboration in Logistics Networks. Business Horizons, 56(1), 7-17.
- Chopra, S., & Sodhi, M. S. (2014). Managing Risk to Avoid Supply-Chain Breakdown. MIT Sloan Management Review, 55(2), 53-62.
- Chopra, S., & Meindl, P. (2018). Supply Chain Management: Strategy, Planning, and Operation. Prentice Hall.
- Christopher, M., & Peck, H. (2019). Building the Resilient Supply Chain. The International Journal of Logistics Management, 15(2), 1-13.
- Kleindorfer, P. R., Singhal, K., & Wassenhove, L. N. V. (2005). Sustainable Operations Management. Production and Operations Management, 14(4), 482-492.
- Lee, H. L., & Billington, C. (1995). The Evolution of Supply-Chain-Management Models and Practice at Hewlett-Packard. Interfaces, 25(5), 42-63.
- Manuj, I., & Mentzer, J. T. (2008). Global Supply Chain Risk Management Strategies. International Journal of Physical Distribution & Logistics Management, 38(3), 192-223.
- Schlegel, G. L., & Trent, R. J. (2018). Supply Chain Risk Management: An Emerging Discipline. CRC Press.
- Sheffi, Y. (2005). The Resilient Enterprise: Overcoming Vulnerability for Competitive Advantage. The MIT Press.
- Tang, O., & Nurmaya Musa, S. (2011). Identifying Risk Issues and Research Advancements in Supply Chain Risk Management. International Journal of Physical Distribution & Logistics Management, 41(4), 276-296.

Notes:

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B.A. (VS) MATERIALS MANAGEMENT

DSC 6.2: Strategic Supply Chain Management

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Strategic Supply Chain Management **DSC: 6.2**	4	3	-	1	Pass in Class XII	NIL

Learning Objectives:

The Strategic Supply Chain Management course provides a comprehensive understanding of the strategic aspects of supply chain management and their impact on organizational success. The course covers various topics related to designing and managing a resilient and efficient supply chain. Students will gain knowledge and skills to develop and execute effective supply chain strategies, optimize operations, mitigate risks, and leverage technology and innovation to gain a competitive advantage.

Learning Outcomes:

1. Analyze factors influencing supply chain design decisions and apply techniques and tools for designing an efficient and effective supply chain network. Evaluate network optimization options for improving supply chain performance.
2. Apply demand forecasting techniques to estimate future customer demand and Implement collaborative forecasting practices to enhance demand-driven supply chains.
3. Apply supplier selection, evaluation, and performance measurement criteria and Develop strategies for collaboration and partnership with suppliers. Evaluate make-or-buy decisions and supplier evaluation criteria and apply negotiation and contract management techniques in procurement.
4. Apply lean principles and practices to streamline supply chain operations and Develop agile supply chain strategies for responsiveness and flexibility. Further apply inventory optimization techniques and models and implement inventory control strategies and technology-enabled solutions.
5. Understand environmental and social considerations in supply chain management and Apply green supply chain practices and sustainability metrics.

6. Evaluate emerging technologies in supply chain management and Develop strategies for innovation and digital transformation in the supply chain.

Unit 1: Strategic Supply Chain Design, Management and Network Optimization 9 hours

Definition and importance of strategic supply chain management, Key concepts and principles in supply chain strategy, Aligning supply chain strategy with business objectives, Designing an efficient and effective supply chain network, Factors influencing supply chain design decisions, Network optimization techniques and tools

Unit 2: Strategic demand planning and Supplier Relationship Management 9 hours

Strategic customer demand planning, Techniques for demand planning and management, Collaborative forecasting and demand-driven supply chains, Importance of effective supplier relationship management, Supplier selection, evaluation, and performance measurement, Collaboration and partnership strategies with suppliers. Procurement platforms for SRM.

Unit 3: Strategic Sourcing and Procurement 9hours

Strategic sourcing process and its impact on supply chain, Make-or-buy decisions and supplier evaluation criteria, Negotiation and contract management in procurement, Lean principles and practices in supply chain management, Agile supply chain strategies for responsiveness and flexibility, Balancing lean and agile approaches in the supply chain, Role of inventory in supply chain performance. Inventory optimization techniques and models, Inventory control strategies and technology-enabled solutions, Appropriate Strategic Sourcing software and applications to be used.

Unit 4: Risk Management and Resilience in Supply Chains (9hours)

Identifying and assessing supply chain risks, Strategies for risk mitigation and supply chain resilience, Business continuity planning and crisis management, Sustainable Supply Chain Management, Environmental and social considerations in supply chain, Green supply chain practices and sustainability metrics, Supplier sustainability assessment and collaboration

Unit 5: Supply Chain Technology and Innovation (9hours)

Role of technology in enhancing supply chain performance, Emerging technologies in supply chain management, Innovation and digital transformation in the supply chain, Strategic advantage of Technology and Innovation in SCM.

Practical Exercise

1. Select a specific industry and discuss the importance of strategic supply chain management in that industry. Provide examples of key concepts and principles in supply chain strategy relevant to the industry.

2. Imagine you are responsible for evaluating and selecting suppliers for a manufacturing company. Develop a supplier evaluation framework and explain how you would measure supplier performance.

3. Role-play a negotiation scenario with a potential supplier. Develop a negotiation strategy and discuss how you would handle contract management in the procurement process.

4. Select a company known for its sustainability practices. Discuss the environmental and social considerations in its supply chain and the green supply chain practices it has adopted.

5. Identify an industry that has undergone a significant digital transformation in its supply chain. Discuss the strategic advantages gained by leveraging technology and innovation in that industry.

Suggested Readings

- Chopra, S., & Meindl, P. (2016). Supply chain management: Strategy, planning, and operation (6th ed.). Pearson.
- Christopher, M., & Peck, H. (2011). Marketing logistics. Routledge.
- Fawcett, S. E., Ellram, L. M., & Ogden, J. A. (2014). Supply chain management: From vision to implementation (2nd ed.). Pearson.
- Handfield, R. B., & Nichols, E. L. (2019). Introduction to supply chain management (2nd ed.). Prentice Hall.
- Hugos, M. H. (2018). Essentials of supply chain management (4th ed.). John Wiley & Sons.
- Lambert, D. M., Cooper, M. C., & Pagh, J. D. (2016). Supply chain management: Processes, partnerships, performance (4th ed.). Supply Chain Management Institute.
- Mangan, J., Lalwani, C., & Butcher, T. (2008). Global logistics and supply chain management. John Wiley & Sons.
- Monczka, R. M., Handfield, R. B., Giunipero, L. C., & Patterson, J. L. (2020). Purchasing and supply chain management (7th ed.). Cengage Learning.
- Simchi-Levi, D., Kaminsky, P., & Simchi-Levi, E. (2014). Designing and managing the supply chain: Concepts, strategies, and case studies (3rd ed.). McGraw-Hill.
- Wisner, J. D., Tan, K.-C., & Leong, G. K. (2019). Principles of supply chain management: A balanced approach (5th ed.). Cengage Learning.

Notes:

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B.A. (VS) MATERIALS MANAGEMENT

DSC 6.3: DIGITAL ECONOMY

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Total Credits	Lectures	Tutorial	Practical	Eligibility criteria	Pre-requisite of the course
Digital Economy (DSC 6.3)	**4**	**3**	**1**	**0**	**Class XII**	**Nil**

Learning Objectives: The course aims to familiarise the student with the economics of the digital goods and services, characterized by transient market behaviour, feedback mechanisms, international impact, global markets, many stakeholders, and technological dependencies never seen in any markets before. It will cover the complex ecosystem, logic of the structures of the digital economy and its outcomes - such as powerful companies & non-monetary pricing, ethical and legal aspects & insights into digital consumer behaviour.

Learning Outcomes: After completion of the course, learners will be able to:

- explain the structural peculiarities of the digital economy and the consequences for market structures and market outcomes.
- develop expedient solutions by identifying structural incentives using prevalent economic models and concepts.
- examine structural incentives underlying the digital economy and its alterations to achieve different outcomes.
- identify ethically desirable states and behaviours and examine how to achieve these via adequate incentive structures.
- explain the logic underlying global efforts to regulate the digital economy
- appraise the consequences and ethical implications of various business models and behaviours in the digital economy.

Unit 1: Introduction to the digital economy: Evolution and digital economy eco-system**, d**igital goods and services, production and value creation models. (10 hours)

Unit 2: Fundamentals of digital economics: multi-sided platforms, network effects and positive feedbacks, path dependence, lock-in and switching costs, formation of monopolies in the digital economy, the "long tail". (13 hours)

Unit 3: Digital markets: Stakeholders and relationships in digital markets, the layered internet model, competition, cooperation, and coopetition;
Digital business, strategy and innovation: Digital innovations, Business models, Strategic positioning. (12 hours)

Unit 4: Some legal developments: Digital Markets Act, Digital Services Act; Ethical challenges in the digital economy; challenges for the Digital payment systems, Challenges for society, Challenges for ethics. (10 hours)

Practical Exercises:

The learners are required to:

1. make a group presentation on how digitization of the economy is impacting your neighbourhood. Search for news articles (2-3) and discuss how digitization influences the various sectors of the economy, the public sector and business domains. (Unit 1)

2. engage in a classroom discussion on the 5G systems and its linkage with the digital economy in India & globally. (Unit2)

2. prepare group presentations describing and discussing the eco-system for the Apple App store, Uber, or any other such platform. (Unit 3)

3. prepare a presentation on services offered in several market segments by any two-sided and multi-sided platform. (Unit 3)

4. engage in a group discussion on the business of streaming services and real-time online gaming with reference to net neutrality, resource sharing and network performance. (Unit 4)

Suggested Readings:

- Harald. Ø., & Audestad. J. A., (2021), *Intoduction to Digital Economics: Foundations, Business Models and the Case Studies* (2nd ed.). Sweden: Springer.
- Harald. Ø., & Audestad. J. A. (2018), *Digital Economics: How Information and Communication Technology is Shaping Markets, Businesses, and Innovation*, Scotts Valley: CreateSpace.
- Belleflamme, P., & Peitz M., (2015), *Industrial Organization: Markets and Strategies* (ch. 20-23). Cambridge: Cambridge University Press.

Notes:

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2. Examination scheme and mode shall be prescribed by the Examination branch, University of Delhi from time to time.

B.A. (VS) MATERIALS MANAGEMENT

DSE 6.1: Supply Chain Finance

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Supply Chain Finance **DSC: 6.3**	4	3	1	-	Pass in Class XII	NIL

Learning Objectives:

Supply Chain Finance is a specialized field that focuses on managing financial aspects within the supply chain, including the flow of funds, working capital optimization, risk management, and collaboration between various stakeholders. This course aims to provide students with a comprehensive understanding of supply chain finance principles, practices, and strategies to enable effective decision-making and value creation in the context of supply chain management.

Learning outcomes:

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

1. explore the financial aspects of supply chain management and their impact on Financial performance in an organization.
2. analyze the risks and challenges associated with supply chain finance and develop strategies to mitigate them.
3. identify the different sources of financing available for supply chain operations and to optimize working capital and improve cash flow within the supply chain.
4. examine the role of technology and digitalization in supply chain finance.
5. develop skills in financial analysis, forecasting, and financial modeling for supply chain decision-making develop the collaboration and coordination among supply chain partners for effective financial management.

Unit 1: Introduction to Supply Chain Finance **9 hours**

Definition and scope of supply chain finance, Evolution and importance of supply chain finance, Key stakeholders and their roles in the supply chain finance ecosystem, Trends and challenges in supply chain finance, Financial Aspects of Supply Chain Management, Financial flows in the supply chain: procurement, production, transportation, and distribution, Working capital

management and its impact on supply chain performance. Cost of capital and its implications for supply chain decision-making, Financial performance metrics in supply chain management

Unit 2: Risk Management in Supply Chain Finance 9 hours

Identification and assessment of supply chain risks, Strategies for managing supply chain risks through financial instruments, Insurance and hedging techniques in supply chain finance, Supply chain resilience and its relationship with risk management

Unit 3: Financing Strategies in Supply Chain Operations 9 hours

Traditional and alternative sources of financing for supply chain activities, Factoring, invoice discounting, and supply chain finance platforms, Capital structure decisions and supply chain financing options, Government initiatives and programs to support supply chain finance

Unit 4: Working Capital Optimization and Cash Flow Management 9 hours

Inventory management and optimization techniques, Accounts payable and accounts receivable management, Cash conversion cycle and its impact on supply chain liquidity, Techniques for improving cash flow within the supply chain. Role of technology in automating financial processes in the supply chain, Integration of supply chain and financial systems

Unit 5: Financial Analysis and Forecasting in Supply Chain Finance 9 hours

Financial statement analysis for supply chain performance evaluation, Forecasting techniques for demand, costs, and cash flows, financial modelling and simulation for supply chain decision-making, Sensitivity analysis and risk assessment in financial forecasts

Collaboration and Coordination in Supply Chain Finance: Collaborative planning, forecasting, and replenishment (CPFR), Vendor-managed inventory (VMI) and collaborative financing models, Cross-functional integration and coordination among supply chain partners, Building trust and effective communication in supply chain finance relationships

Exercise

1. Company XYZ is a manufacturer that sources raw materials from multiple suppliers and distributes finished products to various retailers. They are interested in implementing supply chain finance practices to optimize their financial operations. Define supply chain finance and discuss its scope, highlighting how it can benefit Company XYZ in their procurement, production, transportation, and distribution processes.
2. The supply chain finance department of a multinational corporation is responsible for managing the financial aspects of their global supply chain. The team consists of key stakeholders, including suppliers, logistics providers, and financial institutions. Describe the roles and responsibilities of each stakeholder in the supply chain finance ecosystem, and explain how their collaboration is crucial for effective financial management.

3. A manufacturing company wants to protect itself from potential losses due to fluctuations in commodity prices. Discuss the insurance and hedging techniques available in supply chain finance that can help the company manage the financial risks associated with volatile commodity markets. Provide examples to support your answer.
4. A company is considering implementing a supply chain finance platform to improve its working capital management. Explain the concept of factoring, invoice discounting, and supply chain finance platforms. Assess the potential benefits and challenges the company may encounter by adopting these financing strategies.
5. A company wants to implement collaborative planning, forecasting, and replenishment (CPFR) with its suppliers and retailers to improve supply chain efficiency. Explain the concept of CPFR and discuss the potential benefits and challenges associated with its implementation. Provide recommendations for building effective collaboration and coordination among supply chain partners.

Suggested Readings

- Bals, L., & Tate, W. L. (Eds.). (2017). Handbook of strategic supply chain management. Springer.
- Bowersox, D. J., Closs, D. J., & Cooper, M. B. (2013). Supply chain logistics management. McGraw-Hill Education.
- Cai, W., & Song, D. P. (Eds.). (2016). Supply chain finance and blockchain technology: The case of reverse securitisation. Palgrave Macmillan.
- Fabbe-Costes, N., Jahre, M., Roussat, C., & Vallet, F. (Eds.). (2016). Advances in production management systems. Initiatives for a sustainable world: IFIP WG 5.7 International Conference on Advances in Production Management Systems, APMS 2016, Iguassu Falls, Brazil, September 3–7, 2016, Proceedings, Part I. Springer.
- Harland, C. M., Lamming, R. C., & Cousins, P. D. (Eds.). (2017). Handbook of supply chain management. Routledge.
- Hugos, M. H. (2018). Essentials of supply chain management. John Wiley & Sons.
- Mangan, J., Lalwani, C., & Lalwani, C. L. (2022). Global logistics and supply chain management. John Wiley & Sons.
- Rogers, D. S., & Tibben-Lembke, R. S. (2018). Going backwards: Reverse logistics trends and practices. Reverse Logistics Magazine.
- Simchi-Levi, D., Kaminsky, P., & Simchi-Levi, E. (2014). Designing and managing the supply chain: Concepts, strategies, and case studies. McGraw-Hill Education.

Notes:

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B.A. (VS) MATERIALS MANAGEMENT

DSE 6.2: Mathematical Applications for SCM

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE, REQUISITES OF THE COURSE

Course Title & Code	Total Credits	Lectures	Tutorial	Practical	Eligibility criteria	Pre-requisite of the course
Mathematical applications for SCM DSE – 6.1	4	3	1	-	**Class XII**	**Nil**

Learning Objectives: The course aims to familiarize the learners with the basic mathematical tools with special emphasis on applications to business and economic situations.

Learning outcomes

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

1. Assess the applicability of matrices as mathematical tools in representing a system of equations.
2. Apply differential calculus to solve simple business problems.
3. Evaluate business problems involving complex linear relationships between decision variables and their determining factors.
4. Explain mathematical formulation and solution of problems related to finance including different methods of interest calculation, future and present value of money.
5. Develop programming for business problems involving constrained optimisation.

Unit 1: Matrices and Determinants **9 hours**

Overview of Matrices. Solution of a system of linear equations (having a unique solution and involving not more than three variables) using matrix inversion method and Cramer's Rule Leontief Input Output Model (Open Model Only).

Unit 2: Calculus-I **6 hours**

Concepts and rules of differentiation. Concept of Marginal Analysis: Marginal Revenue, Marginal Cost. Concept of Elasticity of demand and supply. Application of Maxima and Minima problems: Revenue, Cost, Profit, Economic Order Quantity, Optimal trade in time.

Unit 3: Calculus-II **12 hours**

Partial Differentiation: Partial derivatives up to second order. Homogeneity of a function and Euler's theorem. Production Function: Returns to factor, Returns to scale. MRTS and Elasticity of Substitution. Application of Maxima and Minima problems involving two independent variables. Integration: Nature of commodities and partial elasticity of demand, Applications of marginal analysis, Consumer Surplus and Producer Surplus.

Unit 4: Mathematics of Finance **9 hours**

Rates of interest: nominal, effective and their inter-relationships in different compounding situations. Compounding a sum using different types of rates. Applications relating to Depreciation of assets and average due date. Types of annuities: ordinary, due, and deferred - Discrete and continuous. Perpetuity. Determination of future and present values using different types of rates of interest. Applications relating to Capital Expenditure and Leasing.

Unit 5: Linear Programming **9 hours**

Formulation and Assumptions of LPP, Solution by Simplex Method- maximization and minimization cases. Shadow prices of the resources. Special Cases: Identification of unique and multiple optimal solutions, unbounded solution, infeasibility and degeneracy.

Exercises:

The learners are required to:

1. assess the use of matrices in evaluating competing alternatives in logistics and SCM.

2. Apply differential calculus to solve hypothetical business problems in logistics and SCM.

3. evaluate business problems as an application of linear programming in logistics and SCM

4. gather information about various deposit and loan schemes of banks to find out interest rate differentials, and compounded value.

5. gather information about annuity schemes in the investment markets like periodic home mortgage payments, insurance payments and pension payments, life insurance products as an annuity.

6. identify the decision-making variables and assess their functional relationship with other variables affecting the decision in a hypothetical business and economic situation in logistics and SCM .

7. develop programming for hypothetical business problems involving constrained optimisation in logistics and SCM.

Suggested Readings:

- Anthony, M., & Biggs, N. (1996). Mathematics for Economics and Finance. Cambridge: Cambridge University Press.
- Ayres, F. J. (1963). Theory and Problems of Mathematics of Finance. New York: McGraw Hill Publishing.
- Budnick, P. (1986). Applied Mathematics for Business, Economics, & Social Sciences. New York: McGraw Hill Publishing.
- Dowling, E. (2011). Introduction to Mathematical Economics. New York: McGraw Hill Publishing Kapoor.
- Ghosh & Sinha (2018). Business Mathematics and Statistics. Oxford University Press.
- S.K. Sharma and Kaur, G. (2019). Business Mathematics. New Delhi: Sultan Chand & Sons (P) Ltd.
- Singh, J. K. (2017). Business Mathematics. New Delhi: Himalaya Publishing House.
- Thukral, J. K. (2009). Mathematics For Business Studies. New Delhi: Mayur Paperbacks.
- V. K., & Sancheti, D. C. (2014). Business Mathematics, Theory & Applications. Delhi: S. Chand Publishing.

Notes:

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B.A. (VS) MATERIALS MANAGEMENT

DSE 6.3: Inland Waterways and Coastal Shipping

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Inland Waterways and Coastal Shipping **DSE: 6.2**	4	3	1	-	Pass in Class XII	NIL

Learning Objectives:

This course provides a comprehensive understanding of inland waterways and coastal shipping as important modes of transportation. Students will explore the characteristics, operations, and challenges associated with inland waterways and coastal shipping systems. The course will cover topics such as waterway infrastructure, vessel types, navigation and safety, regulatory frameworks, intermodal connectivity, and the economic and environmental aspects of these modes of transportation.

Learning Outcomes:

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

- explain role of inland waterways and coastal shipping in the transportation sector and identify the characteristics and features of inland waterways and coastal shipping systems.
- analyze the infrastructure requirements for efficient and safe navigation in inland waterways and coastal areas.
- evaluate the different types of vessels used in inland waterways and coastal shipping and their operational considerations and understand the regulatory frameworks and policies governing inland waterways and coastal shipping operations.
- assess the intermodal connectivity between inland waterways, coastal shipping, and other modes of transportation. examine the economic and environmental aspects of inland waterways and coastal shipping and their impact on regional and national economies.
- to solve the problems in the context of inland waterways and coastal shipping.

Unit 1: Introduction to Inland Waterways and Coastal Shipping **9 hours**

Definition and significance of inland waterways and coastal shipping, Comparison with other modes of transportation, Historical development and current trends, Characteristics of Inland Waterways and Coastal Areas, Types of inland waterways (rivers, canals, lakes), Coastal zones and their unique features, Impact of geography and topography on navigation

Unit 2: Waterway Infrastructure, Vessel Types and Operations **9 hours**

Locks, dams, and channels, Port facilities and terminals, Navigation aids and signaling systems

Vessel Types and Operations, Barges, towboats, and push boats Ferries and passenger vessels

Cargo handling and stowage considerations,

Unit 3: Navigation and Safety **9 hours**

Navigation rules and regulations, Vessel traffic management systems, Safety protocols and emergency response, Regulatory Frameworks and Policies, Integration with road, rail, and air transportation, Inland ports and intermodal terminals, Last-mile connectivity and hinterland distribution, Economic and Environmental Aspects

Unit 4: International and national regulations **9 hours**

Port authorities and governing bodies, Environmental regulations and sustainability initiatives Intermodal Connectivity, Economic benefits and challenges of inland waterways and coastal shipping, Environmental impact and sustainability considerations, Case studies of successful projects and initiatives

Unit 5: Emerging Technologies and Future Trends **9 hours**

Digitalization and automation in inland waterways and coastal shipping, Energy-efficient and alternative fuel technologies, Predictive analytics and smart shipping solutions, Analysis of real-world projects and operations.

Exercise:

1. Divide the students into groups and assign each group a specific mode of transportation (inland waterways, coastal shipping, road, rail, air). Instruct each group to research and prepare a presentation comparing their assigned mode with others in terms of cost, capacity, environmental impact, and geographic coverage. The groups should discuss the strengths and weaknesses of each mode and present their findings to the class.
2. Provide students with maps and charts of different regions with varying geographic and topographic features (e.g., rivers, canals, lakes, coastal areas). Ask them to analyze how

these features can affect navigation in inland waterways and coastal areas. Students should identify the challenges posed by specific geographic and topographic characteristics and propose strategies to overcome them.

3. Divide the students into small groups and assign each group the task of designing a port terminal for a specific inland waterway or coastal area. Students should consider factors such as vessel types, cargo handling requirements, navigation aids, and safety protocols. Each group should create a layout plan, identify the necessary infrastructure elements (e.g., locks, dams, channels), and explain their design choices.
4. Provide students with different types of cargo (e.g., bulk goods, containers, hazardous materials) and ask them to analyze the appropriate stowage considerations for each type. Students should consider factors such as weight distribution, stability, and securing methods. They should create stowage plans and discuss the potential challenges and safety implications associated with each cargo type.
5. Using a vessel traffic management simulation software or a virtual environment, create scenarios simulating vessel traffic in a specific inland waterway or coastal area. Students should take on different roles, such as vessel operators, traffic controllers, and safety officers, and practice making decisions to ensure safe and efficient navigation. After the simulation, students should reflect on the challenges faced and discuss improvements to enhance navigation and safety.
6. Conduct an emergency response drill in a simulated inland waterway or coastal shipping scenario. Students should develop emergency response plans, including communication protocols, evacuation procedures, and resource allocation. Simulate a specific emergency situation (e.g., collision, hazardous spill) and evaluate the effectiveness of the response efforts. Students should analyze the outcomes and propose enhancements to the emergency response plans.
7. Assign each student or group a specific port authority or governing body responsible for regulating inland waterways or coastal shipping. Students should research and analyze the regulatory framework, policies, and environmental initiatives of the assigned authority. They should assess the compliance levels of the authority and present recommendations for improving regulatory effectiveness and sustainability practices.
8. Provide students with case studies of successful inland waterways or coastal shipping projects or initiatives. Students should critically analyze the economic benefits, challenges, environmental impact, and sustainability considerations of each case study. They should identify key factors contributing to the success of these projects and propose lessons learned that can be applied to future endeavors.
9. Students should research and select a specific digitalization or automation technology used in inland waterways

Suggested Readings

- Baird, A. J., & Kemp, A. C. (2015). Estuaries: Dynamics, Mixing, Sedimentation and Morphology. Cambridge University Press.
- Bell, R. L. (2017). Maritime Logistics: A Complete Guide to Effective Shipping and Port Management (4th ed.). Kogan Page.

- Cappuccilli, R. (2017). Handbook of Coastal and Ocean Engineering: Inland and Coastal Navigation and Coastal Protection (Vol. 2). World Scientific Publishing.
- Goulielmos, A. M. (2015). Sustainable Coastal Management and Climate Adaptation: Global Lessons from Regional Approaches in Australia. Springer.
- Lalli, C. M., & Parsons, T. R. (2022). Biological Oceanography: An Introduction (4th ed.). Elsevier.
- Ramasamy, S. M., & M. A., S. M. (2019). Maritime Economics and Logistics (4th ed.). Routledge.
- Roe, M. (2019). Inland Waterways of Great Britain (9th ed.). Imray, Laurie, Norie & Wilson Ltd.
- Turan, O., & Yong, J. Y. (Eds.). (2019). Sustainable Coastal and Ocean Engineering: Proceedings of the 3rd International Conference on Sustainable Coastal and Ocean Engineering. CRC Press.
- White, R. (2013). The Inland Waterways Manual: The Complete Guide to Boating on Rivers, Lakes, and Canals (3rd ed.). Adlard Coles Nautical.

Notes:

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B.A. (VS) MATERIALS MANAGEMENT

DSE 6.4 Ethics and Corporate Governance

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Ethics and Corporate Governance (DSE-6.3)	**4**	**3**	**1**	**-**	**12th Pass**	**Nil**

Course Objective: This course is designed keeping in view the dominant role that modern corporations play in creating desirable economic, social and environmental outcomes for the society. The aim of the course is to impart basic knowledge of business ethics and values and its relevance in modern day context. The course outlines the key theoretical and practical issues underpinning the study of both corporate governance (CG) and corporate social responsibility (CSR) in an integrated fashion.

Learning Outcomes: After completion of the course, learners will be able to:

1. analyze the concepts, tools and theories of ethics and the issues in ethics.
2. recognize the essence of ethics in business.
3. develop decision-making skills with regard to ethical governance.
4. explain the structure and aspects of corporate governance principles and various theories and forums of corporate governance.
5. provide opportunities for reflection on the roles and responsibilities of directors, promoters, and management towards the shareholders and other stakeholders covering both theory and relevant practices.
6. recognize and demonstrate understanding of emerging issues and challenges in corporate governance.

Unit 1: Introduction to Ethics **9 hours**

Concept of moral reasoning and ethics; Contributions of moral thinkers and philosophers to the concepts of morality; Approaches to Moral reasoning; Essence of Ethics, Dimensions of Ethics; Human Values; Ethical concerns and dilemmas

Unit 2: Business Ethics **9 hours**

Concept; Principles; Theories of Business Ethics; Ethical Organisations, Ethical Dilemmas in Organization, Code of Ethics; Ethical issues in business, Ethics training programme.

Unit 3: Governance of Business Entities **9 hours**

The philosophical basis of governance; Corporate Governance- Meaning and significance; Conceptual framework; Corporate governance systems across the world; Corporate governance in India, CII code on corporate governance – features - Various Corporate Governance forums – CACG, OECD, ICGN AND NFCG.

Cases of corporate frauds and scams- Enron, Lehman Brothers; Satyam Computer Services; PNB Heist; IL&FS Fraud, ABG Shipyards, Yes Bank; Governance issues and challenges

Unit 4: Corporate Social Responsibility **9 hours**

Corporate Social Responsibility – definition – nature – levels – phases and approaches, principles, Indian models – dimensions. Corporate social reporting - Objectives of Corporate Social Reporting and case studies.

Unit 5: Recent Issues and Challenges of Governance **9 hours**

Insider Trading; Whistle Blowing; Shareholders Activism; Class Action suits; Gender Diversity in Boards; Governance of Family entities; Governance of multi-national corporations.

Exercises:

The learners are required to:

1. review and discuss the ethical dilemmas in various scenarios as presented by the teacher in class with respect to a given organization and discuss the ethical concerns in each situation.
2. Conduct a comparative analysis of corporate governance practices in different countries or industries. Ask them to examine the philosophical underpinnings and conceptual frameworks of governance systems in each context. Students should identify similarities, differences, and any potential challenges in implementing effective governance practices
3. Research and evaluate the governance structures of different organizations, such as corporations, non-profit organizations, or government bodies. Ask them to identify the philosophical basis and conceptual framework underlying each governance structure. Students should critically assess the effectiveness of these structures in promoting transparency, accountability, and stakeholder interests.
4. Discuss in class real-life examples of insider trading cases and ask them to analyze the case, identifying the key actors, the unethical practices involved, and the consequences faced by those involved. Encourage students to discuss the legal and ethical implications of each case and propose alternative actions that could have been taken.
5. Research and Presentation: Students will be asked to research a specific aspect of insider trading, such as its impact on market efficiency or the legal framework in different

countries. Ask them to prepare a presentation summarizing their findings and conclusions. This exercise will not only enhance their understanding but also improve their research and presentation skills.

Suggested Readings:

- Monks, Robert A.G. and Minow, Nell, *Corporate Governance*, Wiley.
- Reddy, *Nanda Kishore* and *Ajmera*, *Santosh, Ethics*, *Integrity and Aptitude*, McGraw-Hill Education.
- Sharma, J.P. *Corporate Governance, Business Ethics, and CSR*, Ane Books Pvt Ltd, New Delhi.
- Khanka, S., S. (2014). *Business Ethics and Corporate Governance (Principles and Practices).* S.Chand Publishing.
- Tricker, Bob. *Corporate Governance-Principles, Policies, and Practice (Indian Edition)*. Oxford University Press, New Delhi.
- Weiss, Joseph W. *Business Ethics,* Berrett-Koehler Publishers.
- Mallin, Christine A. *Corporate Governance (Indian Edition)*, Oxford University Press, New Delhi.
- Rani, Geeta D., and Mishra, R.K. *Corporate Governance- Theory and Practice*, Excel Books, New Delhi.

Notes:

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B.A. (VS) MATERIALS MANAGEMENT

DSE 6.5: Basic Development Economics

Course title & Code	Credits	Duration (per week)			Eligibility Criteria	Prerequisite
		Lecture	Tutorial	Practical/ Practice		
Economic Development- Different experiences (DSE 6.5)	**4**	**3**	**1**	**0**	Passed 12th standard	Nil

Learning Objectives

The Learning Objectives of this course are as follows:

- This course discusses different concepts and features of development
- It distinguishes between growth with development
- It discusses historical experiences of poverty, inequality and growth in different countries
- It discusses recent experiences of growth and development
- It analyses governance issues- institutional mechanism- role of state, market and other institutional

  mechanisms, reforms and development policies

Learning outcomes

The Learning outcomes of this course are as follows:

- The course would enable the students to understand the different dimensions of development that are distinct from growth.
- The students will understand the underlying factors that kickstart, sustain and restrict growth and development.
- They will understand why the inequality and poverty are so sticky and thus be able to suggest policy intervention and institutional changes

Syllabus

UNIT I: Concepts of Economic Development (12 hours)

Multiple dimensions of development and alternative measures of development; historical experience of growth and development across countries; understanding poverty, growth, development and their interrelationship; colonialism and underdevelopment; international comparison - PPP

UNIT II: Escaping Under-Development - Recent Attempts and Experiences (12 hours)

Recent development experiences – escaping poverty trap, accumulation of physical and human capital, improvement in health and education, R&D, innovations, and technology adoption; population growth and demographic dividends.

UNIT III: Reform Policies for Sustainable Development (12 hours)

Triple bottom-line of sustainability – economic, social and environmental dimensions; trends in growth, inequality and poverty; various policies for generating economic growth, reducing inequality and poverty, freeing from deprivation; Washington consensus and reform measures; natural and manmade catastrophes,

like covid19, Aids in Africa, hyperinflation in Latin America and reversal of improvements; economic growth and global warming – trends in emissions and mean temperature, future projection; observed impact of warming, future consequences, policies adopted to mitigate the global warming problem in IPCC meets.

UNIT IV: Institutions and Development (9 hours)
Institutions facilitating development – efficacy of market, state and commons in mobilisation and efficient use of resources. Experiences of India, China, and East Asian countries.

Practical Exercise: Students are required to

1. *go observe graphs/diagrams presented in Ch 2 (section 2.4) of Partha Dasgupta and see how different indicators/parameters of development are related to PCI (Unit I)*
2. *go through data on human development and correlate them with income growth (Unit II)*
3. *from Ch1 of Rodrik (2009) find out countries that witnessed high growth but could not sustain and trace the possible reasons*
4. *list major reform policies in China and the institutional changes that facilitated rapid growth and compare it with India's experience using Bardhan (2010) and Rodrik (2009)*

Recommended readings

- Dasgupta, Partha, (2007), *Economics: A Very Short Introduction*, (AVSI), Oxford University Press.
- Ray, Derbraj, (1998). Development Economics, Princeton University Press
- Todaro, M. P., & Smith, S. C. (2020). *Economic Development*. Pearson UK.
- Acemoglu, D., Johnson, S., & Robinson, J.A. (2001). "The Colonial Origins of Comparative Development: An Empirical Investigation." *American Economic Review*. 91: 1369–1401.
- Banerjee, A., & Duflo, E. (2011). Poor Economics: A Radical Rethinking of the Way to fight Global Poverty.
- Deaton, A., (2013), The Great Escape, Princeton University Press
- Hall, Robert E. & Jones, C. I. (1999). "Why Do Some Countries Produce So Much More Output Per Worker Than Others?" *Quarterly Journal of Economics*, 114(1): 83-116.
- Elinor Ostrom (1990), *Governing the Commons: The Evolution of Institutions for Collective Action*, Cambridge University Press.
- Ranis, G,. et.al, (2000) Economic Growth and Human Development, *World Development*Vol. 28, No. 2, Elsevier Science Ltd.
- Galor, Oded &M. (2004). "From Physical to Human Capital Accumulation: Inequality and the Process of Development." *Review of Economic Studies*, 71(4): 1001–1026.
- Rossi, Federico. (2020). Human Capital and Macroeconomic Development: A Review of the Evidence. *The World Bank Research Observer*, 35 (2): 227–262.
- Bardhan, P.(2010),*Awakening Giants, Feet of Clay: Assessing the Economic Rise of China and India*, OUP.

- Dietz, T., Ostrom, E. & Stern, P.C. (2003). 'The Struggle to Govern the Commons', *Science*, vol. 302, No. 5652 (Dec. 12, 2003), pp. 1907-1912.
- Rodrik, Dani (2009), *One Economics, Many Recipe's: Globalization, Institutions and Economic Growth*, Princeton University Press.
- Rodrik, Dani. (2014). "The Past, Present, and Future of Economic Growth," in Franklin Allen et al., *Towards a Better Global Economy: Policy Implications for Citizens Worldwide in the 21st Century*, Oxford University Press, Oxford and New York.
- Piketty, Thomas & Saez, E. (2014). 'Inequality in the Long Run', Science, 344 (838).
- Heal, G. (2012),Reflections—Defining and Measuring Sustainability. Review of Environmental Economics and Policy, volume 6, issue 1, winter 2012, pp. 147–163
- Harris, J. & Roach, B.(2018). *Environmental and Natural Resource Economics: A Contemporary Approach*, Routledge. Chapters 12, 13.

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B.A. (VS) MATERIALS MANAGEMENT

GE 6.1: Introduction to Warehouse Management

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE, REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Introduction to Warehouse Management GE: 6.1	4	3	1	-	Pass in Class XII	NIL

Learning Objectives:

To understand the concepts of warehouse management and inventory control, students will get a basic idea about warehousing and inventory management techniques. It will help them in understanding the need for warehouse management systems and measures of Material handling systems.

Learning Outcomes: After completion of this course, the learners will be able to:

1. Recognize the need for warehousing in today's competitive environment and how supply chain trends are impacting the design and operation of warehouses.

2. Identify different types of material handling equipment and their characteristics and use a material handling equipment checklist to select the most suitable equipment for a given warehouse operation.

3. Develop strategies for improving receiving and issuing material operations, including the use of barcoding and RFID technologies, the use of automation, and the optimization of picking and replenishment operations.

4. Identify the functions of inventory and the different types of inventories, including WIP, finished goods, and MRO.

5. Evaluate the applications of barcoding technology in material handling systems, including the benefits of real-time data collection, accuracy, and efficiency.

Unit1: Introduction to Warehouse **9 hours**

Warehouse: definition, warehouseman, depositor. Warehouse functions, warehouse process, types of warehouses: public and private warehouses, warehousing corporations-central and state warehouses, role of warehousing in an economy, Supply chain trends affecting warehousing, Problems and challenges in warehousing, characteristics of ideal warehouse, warehousing for online businesses. Recent trends in warehousing: Cloud-based operations management, Technology for omnichannel logistics, Simulation to anticipate needs, Logistics decisions based on big data, Robotics and Drones in warehousing.

Unit2: Warehouse Management Systems **9 hours**

Warehouse management systems, the necessity of WMS, warehouse location, Logics of determining locations and sequences, independent demand systems, uncertainties in material management systems, dependent demand systems, distribution resource planning. The layout of the warehouse, Size and shape of the warehouse, Storage utilization and organization, Types of storage systems, Fixed versus random location, Material handling equipment, Material handling equipment checklist, Improving the receiving/issuing material operations, choosing a WMS-the process implementation-cloud computing, Warehouse layout-Data collection-space calculation-aisle width- finding additional space.

Unit3: Warehouse Operations **9 hours**

The principles and performance measures of material handling systems –Vehicle travel path (time) – Handling time –vehicle utilization –number of loads completed –congestion –Effective performance systems, Importance of Warehouse Information, Decision Making Using Warehouse Information, ICT Applications in a Warehouse, Fundamentals of various types of material handling systems –automated storage and retrieval systems Bar Code Scanners, Wireless LAN, Mobile Computers, Bar coding technology and applications RFID technology. Warehouse automation.

Unit4: Inventory Management in Warehouse **9 hours**

Introduction to inventory management, role in the supply chain, role in competitive strategy: Role of inventory, functions of inventory, types of inventories, WIP inventory, finished goods inventory, MRO (maintenance, repair, and operations) inventories, cost of inventories, need to hold inventory. Warehousing and inventory costs, Customer service in warehousing, locating inventory, organizing inventory, Dispatching inventory, Methods of inventory control: ABC Inventory control, managing inventories by ABC, FSN, EOQ, Batch tracking, multi –echelon inventory systems Managing inventory in multi echelon networks –managing inventory in single echelon networks.

Unit 5: Material Handling and Warehouse Safety **9 hours**

Material Handling and Warehouse Safety: Material handling, Product movement-concept-costs-product load activity, dispatch activity unload, activity-control device-impact of computer technology-automatic identification-issues and trends in product transport, Packaging, Pallet, Stretch wraps, Cartons, Labelling, Health.

Practical Exercises:

The learners are required to:

1. identify the issues affecting warehousing and warehousing facilities by visiting to some warehouse.
2. prepare a report on the inventory management of any given company.
3. suggest the solutions to various uncertainties in material management systems in any warehouse
4. prepare the report on the multi –echelon inventory systems of any company.
5. apply the material handling systems for any company of your choice
6. to prepare report as a warehouse manager for a retail company that sells clothing and accessories online which want to set up a new warehouse facility for the company.

Suggested Readings:

- Arnold, J. R., & Chapman, S. N. (2018). *The Introduction to Materials Management* (7th ed.). Prentice-Hall.
- Blanchard, D. (2018). *Supply Chain Management Best Practices*. Wiley Publishing.
- Coyle, J. J., Jr., Langley, C. J., Novack, R.A., & Gibson, B.J. (2022). *Managing Supply Chains: A Logistics Approach* (9th ed.). McGraw-Hill.
- Chopra, S., & Meindl, P. (2018). *Supply Chain Management: Strategy, Planning, and Operation.* Pearson Education.
- Ten Hompel, M., & Schmidt, T. (2017). *Warehouse Management: Automation and Organisation of Warehouse and Order Picking Systems* [With CDROM]. Springer Verlag.
- Jessop, D. (1999). *Stores and Inventory Management*. Chartered Institute of Purchasing and Supply.
- Jacobs, F. R., & Chase, R. B. (2017). *Operations and Supply Chain Management*. McGraw-Hill Education.
- Mangan, J., Lalwani, C., & Butcher, T. (2016). *Global Logistics and Supply Chain Management*. John Wiley & Sons.

- Mentzer, J. T., Stank, T. P., & Esper, T. L. (2008). *Supply Chain Management: Principles and Practice.* Sage Publications.
- Rushton, A., Croucher, P., & Baker, P. (2020). *The Handbook of Logistics and Distribution Management: Understanding the Supply Chain*. Kogan Page.
- Saxena, J.P. (2018). *Warehouse Management and Inventory Control*. Vikas Publication House Pvt Ltd.
- Tompkins, J.A., & Harmelink, D. (2017). *Basics of Supply Chain Management*. St. Lucie Press.
- Waters, D. (2017). *Supply Chain Management: An Introduction to Logistics*. Palgrave Macmillan.
- Wild, R. (2017). *Warehouse Management: A Complete Guide to Improving Efficiency and Minimizing Costs in the Modern Warehouse*. Kogan Page.

Notes:

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B.A. (VS) MATERIALS MANAGEMENT

GE 6.2 Introduction to Supply Chain Management

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE, REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Introduction to Supply Chain Management GE: 6.2	4	3	1	-	Pass in Class XII	NIL

Learning Objective: The course aims to acquaint the students with fundamentals of supply chain management in an organization as well as the role of Relationship Marketing in SCM and to forecasting demand of material and plan supply in Supply Chain process. They will be able to understand different factors of SCM.

Learning Outcomes: After completion of the course, learners will be able to:

1. Explain the fundamentals of supply chain management in an organization as well as the role of Relationship Marketing in SCM;
2. forecast demand of material and plan supply in Supply Chain process. They can also explain the different factors of SCM.
3. develop strategies in Supply Chain as well as explain the concepts of Inventory and Vendor Management.
4. measure the performance using various indicators, Supply Chain Metrics (KPIs), Balanced Score Card Approach and Benchmarking;
5. demonstrate the understanding of the emerging Trends and Challenges in SCM.

Course Contents:

Unit 1: Introduction to Supply Chain Management (SCM) and Planning 9 hours

Concept of Supply Chain Management- Evolution, Importance, Scope, Functions, Logistics Vs SCM. Value chain for SCM, Role of relationship marketing in SCM; Managing relationships with suppliers and customers; Types of intermediaries. Planning demand and Supply in a Supply Chain: Demand forecasting in SCM; Aggregate planning in supply chain; Planning supply and demand in Supply Chain: Managing predictable variability

Unit 2: Supply Chain Strategy and Implementations **9 hours**

Web-centric Supply Chain- Supply Chain in E-business, E-collaboration, E-Procurement; Structure of Supply Chain Management; Management of the Inventory in the Supply Chain Analysis including Vendor Management.

Unit 3: Supply Chain Performance Measurement **9 hours**

Methods of performance measurement- balanced score card approach, benchmarking, supply chain metrics (KPIs). Performance measurement and continuous improvement.

Unit 4: Trends and Challenges in Supply Chain Management **9 hours**

Third party and fourth party logistic outsourcing- Challenges and future directions. Global Supply Chain Management; Green supply chain management; Use of Information Technology in SCM; Re-engineering the supply chain- Future directions.

Exercises

The learners are required to:

1. study the practical benefits accrued by relationship marketing in SCM;
2. assess the use of demand and supply planning methods in an uncertain environment;
3. analyse the SCM strategies and inventory management used by various companies;
4. measure the supply chain performance of few organizations;
5. discuss the latest trends and the impact of emerging issues in SCM.

Suggested Readings:

- Alan E. Branch, Global Supply Chain Management and International Logistics. Routledge, New York.
- Chopra, S. &Meinde, P. Supply Chain Management- Strategy, Planning & Operation. Pearson Education.
- Gattorna, J.L and D.W. Walters, Managing the Supply Chain: A Strategic Perspective. Macmillan, Hampshire.
- Hult, M. G., Closs, D., Frayer, D. Global, Supply Chain Management: Leveraging Processes, Measurements, and Tools for Strategic Corporate Advantage. McGraw Hill Ltd.
- Sarika Kulkarni and Ashok Sharma, Supply Chain Management. Tata McGraw-Hill Publishing Company Limited, New Delhi.
- Simchi-Levi, D., Kaminsky, P., Simchi-Levi, E. & Ravi, Shankar. Designing and Managing the Supply Chain. Tata McGraw Hill Education Private Limited.

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