Proposal for Inclusion of
Logistics Management as a Subject
at Higher School Level (11th - 12th Std)
Submitted to the Ministry of Education

National Institute of Industrial Engineering (NITIE)
Mumbai - 400087

Proposal for Inclusion of Logistics Management as a Subject at Higher School Level (11th - 12th Std)

Introduction:

Logistics Management is very important in delivering products or services to customers. Naturally, it is critical to our country's economy. Moreover, it has been more prominent with the launch of the PM Gati Shakti National Master Plan in October 2021. This plan focuses on enhancing the country's logistics efficiency and supply chain performance. It is the need of the hour to introduce this at the high school level as a subject in all schools to sensitize all future leaders across the country. Keeping this in Mind, NITIE has designed a course for the inclusion of Logistics Management as a subject at higher school.

Course Description for the course on Logistics Management:

This course introduces the principles and concepts of Logistics and Supply Chain Management. Students will learn about the different components of a Logistics and Supply Chain. The role of Logistics in business and the importance of efficient logistics management in different application domains. The course covers the fundamentals of inventory, transportation, warehousing, digital support systems, and modern tools, techniques, and technologies. A brief description of logistics processes is also included. Through this, subjects like Logistics Management at the high school level will help in the active involvement of students, teachers, and parents in the overall improvement of the logistics performance of the country.

Learning Objectives:

Upon completion of this course, students will be able to:

- Understand the importance of Logistics and Supply Chain Management
- Identify the different components and their functions
- Explain the role of transportation in logistics.
- Describe the functions of a warehouse in logistics.
- Understand the importance of inventory management.
- Explain the role of information systems in Logistics Management.

Course Outline:

Part 1: Fundamentals of Logistics Management

Introduction to Logistics and Supply Chain

- Introduction to Supply Chain and its importance in our daily life
- Introduction to Logistics and its evolution
- Importance of Logistics in the Supply Chain, an overview of PM Gati Shakti NMP and National Logistics Policy
- Logistics Cost and its Components
    - Storage, warehousing, and materials handling
    - Packaging and unitization.
    - Inventory management
    - Transport
    - Information and Control
- Modern Concepts in Logistics
    - Inbound logistics
    - Outbound logistics

- The Role of Logistics in the Economy and Organization
    - Role of Logistics in the Economy
    - Role of Logistics in the Organization
    - The relationship of logistics activities to logistics costs
    - Future challenges and areas for logistics performance improvement

Warehousing

- Introduction to Warehouse with applicationsWarehousing network design
- Configuration of warehousing space
- Value-adding activities
- Stockpiling, spot stocking, and assortments
- Cross-docking, break bulking, and consolidation
- Mixing, postponement, and assembly-to-order
- Warehousing equipment and tools

Transportation in Logistics

- Introduction to transportation
- Different modes of transportation
    - Road transport
    - Rail transport
    - Inland waterway transport
    - Maritime transport
    - Air transport
    - Intermodal transport
    - Multi-modal transport
- Fleet management
- Optimized routing and cubing

Cold Supply Chain and Logistics

- Introduction to Cold Chain
- Application of Cold Chain in our daily life
- Logistics Requirements
- Application of the latest technologies in cold chain logistics

Global Logistics

- Introduction - Concept of global logistics and various terms
- Evolution and development of global logistics
- Importance of global logistics
- Interface of marketing and global logistics
- Risk in global logistics.

Risk and Disruption in Logistics

- Introduction to different kinds of risk and disruption
- Sources, Impacts, and Mitigation strategies
- Supply Chain Resilience
- A study on Covid-19 and its impact

Sustainable Logistics

- Introduction to Sustainable Logistics
- Reverse Logistics
    - Fundamentals of reverse logistics
    - Reverse logistics issues
    - Driving force behind reverse logistics
- Sustainable Packaging
- Green Transportation and Carbon Footprinting

Part 2: Application Domains of Logistics Management

Agri-Food Logistics

- Introduction to Agri-food Supply Chain
- Different storage methods
- Transportation requirements
- Network optimization

Healthcare Logistics

- Introduction to Healthcare logistics
- Requirement analysis and sourcing
- Logistics planning
- Demand management

Digital Logistics

- Introduction to digitization
- Role of information in logistics and supply chain
- Bigdata and application AI/ML
- Challenges and opportunities
- Framework of building a digital logistics system

Retail Logistics

- Introduction to Retail Supply Chain
- Different channel configurations
- Storage and transportation planning
- Role of information technology in the retail logistics
- Sustainable practices in retail logistics.

Humanitarian Logistics

- Introduction to Humanitarian Supply Chains and classifications
- Logistics Planning for Emergency Supplies
- Role of Information and Communication Technology in Emergency Situations
- Humanitarian Partners, Cooperation, and Management
- Emerging and Global Trends in Humanitarian Logistics

Military Logistics

- Emergence of Modern Warfare
- Logistics of Global Warfare
- Responsibilities for Logistic Operations & Logistic Principles
- Joint Logistic Planning

Advanced Logistics

- Use of drones and AGVs in logistics
- Use of robots in material handling
- Application of blockchains
- Use of geospatial and geoinformatics

Case Studies

- CSCMP Third Party Logistics Case study - what shippers outsource and what 3PLs offer, identifying trends in shipper expenditures for 3PL services, and recognizing key shipper and 3PL perspectives on the use and provision of logistics services.
- Steel Corp – Using Logistics Criteria to Segment Customers
- Managing a Network of Decentralized Distribution Centers
- CSCMP Case Study - Strategic Issues with Planning and Scheduling the Marine Movement of Chemicals via a Major Port under Growth Conditions
- CSCMP Case Study - Rocket-Blast, LLC: The Trade-offs of Logistics Cost and Performance Options

Reference Books:

1. Simchi-Levi, David, Xin Chen, and Julien Bramel. *The Logic of Logistics: Theory, Algorithms, and Applications for Logistics and Supply Chain Management*. 2nd ed. New York, NY: Springer, 2004. ISBN: 9780387221991.
2. Bowersox, D.J., Closs, D.J., & Cooper, M.B. (2012). Supply Chain Logistics Management. McGraw-Hill Education.
3. Christopher, M. (2016). *Logistics & supply chain management*. Pearson UK.
4. Ghiani, G., Laporte, G., & Musmanno, R. (2013). *Introduction to logistics systems management*. John Wiley & Sons.
5. Rushton, A., Croucher, P., & Baker, P. (2022). *The handbook of logistics and distribution management: Understanding the supply chain*. Kogan Page Publishers.

Learning Outcomes:

The main outcomes of the course will be the

- Understanding of the significance of logistics and supply chain
- Ability to Identify the different components of a supply chain and their functions.
- Interpret the role of transportation in a supply chain.
- Understand the importance of inventory management and Digital systems in a supply chain.