

APPRENTICESHIP-BASED UG DEGREE PROGRAMME IN LOGISTICS

COLLABORATIVE PROGRAMME OF LSC



REGULATION & CURRICULUM

VERSION 2021-22

NATIONAL SKILL QUALIFICATION FRAMEWORK LEVEL:5

**APPRENTICESHIP-BASED UG DEGREE PROGRAMME
IN LOGISTICS**

COLLABORATIVE PROGRAMME OF LSC

REGULATION & CURRICULUM

VERSION 2021-22

NATIONAL SKILL QUALIFICATION FRAMEWORK LEVEL:5

MIS FOR LOGISTICS

Semester
IIICourse Type
DomainCode
L21C15Hours
60Credits
4Version
2021-22**COURSE OBJECTIVES:**

- To develop competencies and knowledge of students to become MIS for logistics professionals
- To orient students in the field of Logistics
- To help Students to understand MIS for Logistics

LEARNING OUTCOMES:

- Students will be able to apply the Basic knowledge of MIS for Logistics in the real-life situation
- This subject will enable them to enhance their ability and professional skills in Logistics

Unit	Topics
I	Introduction- IT and management opportunities and challenges-Strategic planning and models - Information management & IT Architecture – IT Architecture & infrastructure, cloud computing and services, Virtualization and Virtual Machines.
II	Database Technology- Data warehouse- Data Mart Technologies- Data and Text mining- Business Intelligence & Analytics, Digital and physical document management. Networks, collaboration & sustainability: Business IT networks & components, communication technologies – Sustainability and Ethical issues - Internal control-Business Control and Auditing.
III	Dissemination of technology information- and strategic planning – Technology choice and evaluation methods – Analysis of alternative technologies – Implementing technology programmes - Intellectual Capital - An introduction to Intellectual Property Right - Patent -Copyrights - Trademarks and other issues.
IV	Functional Area & Compliance systems: Management levels and functional systems Enterprise Systems and applications: Enterprise systems, Enterprise Resource Planning (ERP), Supply Chain Management (SCM), Collaborative Planning, Forecasting, and Replenishment system (CPFR), Customer Relationship Management (CRM). Performance Management: Data visualization, Mashups, and Mobile intelligence, Fleet Management Information System.
V	Business Process and Project Management: - Architecture & IT design, System development, Software & Applications for management (Business software tools), Support system. ERP modules -sales and Marketing, Accounting, Finance, Materials and Production management etc.

Text & Reference Books:

1. Course Material Prepared by LSC
2. KENNETH C. L., JANE P. L., & RAJANISH DASS (2001) Management Information System - Managing the Digital Firm. Pearson Education: New Delhi.
3. RAVI, K., & ANDREW, B. W. Frontiers of Electronic Commerce. Pearson Education: New Delhi.
4. KENNETH, C. L., & JANEP, L. (2001) Essentials of MIS. Prentice Hall India: New Delhi.
5. SADAGOPAN, S. (2003) Management Information System. Prentice Hall India: New Delhi.
6. EFF, O.Z. (2003) Management Information Systems. Vikas Publishing House Pvt. Ltd.: New Delhi.

INTERNATIONAL LOGISTICS MANAGEMENT

Semester
III

Course Type
Domain

Code
L21C16

Hours
45

Credits
3

Version
2021-22

COURSE OBJECTIVES:

- To develop competencies and knowledge of students to become International logistics management professionals
- To orient students in the field of Logistics
- To help Students to understand international Logistics management

LEARNING OUTCOMES:

- Students will be able to apply the Basic knowledge of International Logistics management in the real-life situation
- This subject will enable them to enhance their ability and professional skills in Logistics

Unit	Topics
I	International Logistics: Definition, Evolution, Concept, Components, Importance, Objectives; Logistic Subsectors; The work of Logistics; Integrated Logistics; Barrier to Internal Integration.
II	Customer Focused Marketing; International Marketing: Introduction, Definition, Basis for International Trade, Process, Importance; International Marketing Channel: Role of Clearing Agent, Various Modes of Transport, Choice and Issues for Each Mode, Transport Cost etc.
III	Transportation Functionality and Principles; Multimodal Transport: Modal Characteristics; Modal Comparisons; Legal Classifications; International Air Transport; Air Cargo Tariff Structure; Freight: Definition, Rate; Freight Structure and Practice
IV	Containerization: Genesis, Concept, Classification, Benefits and Constraints; Inland Container Depot (ICD): Roles and Functions, CFS, Export Clearance at ICD; CONCOR; ICDs under CONCOR; Chartering: Kinds of Charter, Charter Party, and Arbitration.
V	International commercial documents - International contracts, terms of payments, international insurance, packaging for export, custom clearance and infrastructure: transportation, communication and utilities - Brokerage

Text & Reference Books:

1. Course Material Prepared by LSC
2. International Marketing by Gupta and Varshing, Publisher: Sultan Chand and Sons
3. International logistics by Pierre David, Publisher: Biztantra
4. Logistic Management and World Sea Borne Trade by Multiah Krishnaveni, Publisher: Himalaya Publication
5. Logistic and Supply Chain Management by Donald J. Bowerson, Publisher: Prentice Hall of India

MARKETING MANAGEMENT

Semester
IIICourse Type
GeneralCode
L21C17Hours
45Credits
3Version
2021-22**COURSE OBJECTIVES:**

- To emphasize the importance of the marketing function in an organization.
- To understand the core concepts right from deciding the segment till customer satisfaction
- To impart knowledge with respect to latest trends in Marketing, Marketing Mix, Social responsibility and ethical issues in Marketing

LEARNING OUTCOMES:

- Differentiate the consumer and institutional buyer behavior.
- Justify the importance of products, branding and new product development
- Understand the importance of Channel of distribution.

Unit	Topics
I	Meaning and concepts of Marketing, Sales Concept, Marketing concept, Social Marketing concepts, Societal Marketing concept, Marketing Mix, 4 Ps of Marketing, Marketing Environment in India.
II	Consumer Behaviour – Factors influencing buying behaviour – consumer buying decision process – Buying motives – influences-Market segmentation – criteria - Bases of segmentation – benefits. Introduction to Marketing research:
III	Product Planning & Development -Definition, Classification of Product, Stages of Product Life Cycle (PLC) and Factors affecting PLC.-Product Development: Meaning, Principle of Product Development, Stages of New Product Development - Pricing-Meaning, Objectives, Price Policies and Strategies and Methods of fixing prices.
IV	Distribution Channel- meaning, Types of Distribution channel- Direct & Indirect. Role of intermediaries and distribution channel management. Channel Management Decisions, Promotion- elements of promotion mix- Advertising, sales promotion, personal selling and sales management. Public and customer relations, direct and online marketing,
V	An overview. Advertising, sales promotion, personal selling and sales management. Public and customer relations, direct and online marketing, multilevel marketing -Marketing and society-Social responsibility and ethical issues in marketing.

Text & Reference Books:

1. C.B.Gupta and N. Rajan Nair , Marketing Management, 19th Edition,2020,Sultan Chand & Sons.
2. Ramasamy V.S. and Namakumary S, Marketing Management-Global Perspective, Indian context,4th Edition,2009, Macmillan.
3. Rajagopal, Marketing Management-Text & Cases,2000,1st Edition, Vikas Publishing House Pvt., Ltd.,
4. S. Jayachandran, Marketing Management, 2004Excel Books India.
5. Rajan Saxena, Marketing Management, 4th Edition,2009 McGraw Hill Education.

RETAIL LOGISTICS AND E-COMMERCE

Semester
IIICourse Type
DomainCode
L21C18Hours
45Credits
3Version
2021-22**COURSE OBJECTIVES:**

- To develop competencies and knowledge of students to become Retail logistics and E-commerce professionals
- To orient students in the field of Logistics
- To help Students to understand Retail logistics and E-commerce

LEARNING OUTCOMES:

- Students will be able to apply the basic knowledge of Retail logistics and E-commerce in the real-life situation
- This subject will enable them to enhance their ability and professional skills in Logistics and E commerce

Unit	Topics
I	Concept and Scope: Concepts of Retail Logistics and supply chain- Importance of Logistics in these days global Sourcing, Dimension of Logistics: Macro and Micro aspects-Supply chain contours: Backward and forward linkages
II	Logistics and Retail Marketing: Logistics as a Support function of Order Fulfilment, Assembling & Labelling from Multi-storage points and Delivery- Logistics as an interface of Market forecasting, Stock level management and other relevant activities till transportation, preparation for dispatch and outbound documentation and customer facilitation tracking out-bound shipments.
III	Reverse Logistics: Basic of reverse logistics - concept, key activities , coordinating with carriers, route map optimization, collecting pickup and feedback - Types of reverse logistics –Roles and responsibilities -Best practices in reverse logistics
IV	E-Commerce: Introduction to E-commerce logistics including delivery and pickup models and the overall logistic setup – Order Processing – Activities in order processing - Types of order processing - - Procedures for generating plans and schedules through MIS
V	Types of Ecommerce- B2B-B2C and intra business. Retail Ecommerce – Retailing through internet, Direct Online Sales model and its types- Business Models for ecommerce. Electronic Payment system, Electronic CRM Applications. E-Security

Text & Reference Books:

1. John Fernie & Leigh Sparks ,”Logistics and Retail Management: Emerging Issues and New Challenges in the Retail Supply Chain “,Kogan Page 3rd Edition,2009
2. James B. Ayers & Mary Ann Odegaard , “Retail Supply Chain Management “taylor & francis, 2nd edition
3. Mr. Gibson G, “Retail Management: Functional Principles & Practices”, Jaico Publishing house, 6th Edition, 2003.
4. Ray, Supply Chain Management For Retailing, TMH, 2010.
5. James B. Ayers, Retail Supply Chain Management, Auerbach Publications,2007.

WORD & PRESENTATION TOOLS - PRACTICALSemester
IIICourse Type
GeneralCode
L21C19Hours
60Credits
4Version
2021-22**COURSE OBJECTIVES:**

- To introduce the student to the Word & Presentation tools and its applications and thereby empowering him to utilize e-sources for upgrading their knowledge base.
- To introduce the students with some basic tools and applications which will enable them in e-communicating effectively and analyse data for decision making using data of different kinds.

LEARNING OUTCOMES:

- Students will be able to apply the Word & Presentation tools in real-life application.
- Enable students to enhance their ability and professional skills in the Computer Application in MS-Word & Presentation

Unit	Topics
I	Windows 2000- working with windows – moving formation within windows arranging Icons Saving Window settings. MS Office Basics – Creating document – entering text-Selecting text giving instructions- Using tool bars- Menu commands- Keyboards shortcuts- Saving files Opening documents – Manipulating Windows – simple Editing- Printing Files.
II	Word Basics – Using Auto text – Using Auto Correct Word editing technique finding and replacing text – Checking spelling – using templates- formatting – Formatting with styles creating tables.
III	Power Point basics- Working in outline view- using a design template- Merging presentations in Slider sorter view applying templates – Adding graphs- adding organization Charts.
IV	MS-Word-Practical Type the text, check spelling and grammar bullets and numbering list items, align the text to left, right justify and centre. -Prepare a job application letter enclosing your Bio-Data-Perform Mail Merger Operation and Preparing labels. -Prepare the document in newspaper column layout.
V	MS POWER POINT-Practical Prepare a PowerPoint presentation with at least three slides for department Inaugural Function-Draw an organization chart with minimum three hierarchical levels-Design an advertisement campaign with minimum three slides-Insert an excel chart into a power point slide.

Text & Reference Books:

1. Office 2000 Complete Reference by Stepher L. Nelson.
2. PC Software for window made simplex by R.K Taxali – Tata McGraw Hill Publishers Pvt. Ltd.,

LIFE SKILL DEVELOPMENT - PRACTICAL

Semester
IIICourse Type
GeneralCode
L21C20Hours
45Credits
3Version
2021-22**COURSE OBJECTIVES:**

- To develop competencies and knowledge of students to become Aviation & Air Cargo Professionals
- To Introduce Students with key Skills that are required to be Employable in the Corporate World in general and Aviation and Air Cargo Industry in specific

LEARNING OUTCOMES:

- Students will be able to apply these skills while transition from Campus to Corporate and acquire the much-needed employability skills

Unit	Topics
I	Soft Skills- What are Soft Skills, The Importance of Soft Skills during transition from Campus to Corporate
II	Soft Skills- Time Management, Stress Management, Grooming Skills, Listening Skills, Creative Thinking, Telephone Etiquette, Social Media Etiquette
III	Communication Skills- <ul style="list-style-type: none"> a) Non-Verbal- Types of Non-Verbal Communication, Essentials, Barriers b) Verbal- Types of Non-Verbal Communication, Essentials, Barriers
IV	Interview Handling & Preparation <ul style="list-style-type: none"> a) Types of Interviews- Face to Face, Videoconferencing, Skype, Telephonic b) Identifying job openings c) Applying for a job d) Preparing Cover letters e) Preparing a CV/Resume and Effective Profiling f) Group Discussions g) Behavioural Event Interviews
V	Leadership Skills <ul style="list-style-type: none"> a) Leadership Styles b) Decision Making c) Intrapersonal & Interpersonal Skills d) Problem Solving Skills e) Negotiation Skills f) Critical Thinking

Text & Reference Books:

1. Sizzling Soft Skills for Spectacular Success- P Ameer Ali- Publisher: Notion Press; First edition (2017)
2. Soft Skills: An Integrated Approach to Maximise Personality-Gajendra Singh Chauhan, Sangeeta Sharma- Wiley (2015)
3. Master of Business Etiquette: The Ultimate Guide to Corporate Etiquette And Soft Skills- Cyrus M Gonda- Embassy Books; First edition (2016)
4. How to Get That Job (A Guide for the Journey beyond Academics)- Jogesh Jain- Notion Press; First edition (2017)
5. The 21 Irrefutable Law of Leadership-John C. Maxwell- Maanu Graphics Publishers (2013)

LINER LOGISTICS

Semester
IIICourse Type
GeneralCode
L21C21Hours
45Credits
3Version
2021-22**COURSE OBJECTIVES:**

- To develop competencies and knowledge of students to Liner logistics professionals
- To orient students in the field of Logistics
- To help Students to understand Liner logistics

LEARNING OUTCOMES:

- Students will be able to apply the Basic knowledge of Liner Logistics in the real-life situation
- This subject will enable them to enhance their ability and professional skills in Logistics.

Unit	Topics
I	Definitions of liner trades; tramp trades; containerization- Unitization - containerization, liner operations, port organization – Vessel loading and discharging , liner trade routes, The major ports, liner service options - Liner trade – ship types – Tonnages; basic ship layout, types of container ships, Ro-Ro barge carrying vessels, The refrigerated cargo ship conventional (Break bulk) vessels future vessel developments, economy of scale, shipboard handling equipment.
II	Cargoes & cargo equipment – Dangerous goods IMO special goods, cargo handlings other methods of lifting cargo port handling equipment, port terminals; port and terminal management; the role of ships officers - agent. Liner Shipping operations - Management and policy, ship management and operations, independent ship management, insurance, trade of commercial department, accounting, budgeting, freight collection and port disbursements agency duties.
III	Containerization unitization and inter-modalism - Growth in world trade unitization; container dimensions, types of container other container expressions container inventory, owning, leasing meeting the demand for containers tracking the container fleet, container control, FCL LCL & ICDS , legal & insurance implications in the container trade.
IV	The Bill of Lading and other Documentation - The Bill of Lading UK bill of lading Act 1855 and UK carriage of goods by sea Act 1992, The use of Bill of Lading in liner trades, Bill of Lading documentary credits, Bill of Lading clauses The printed clauses – The evidence of the contract, other forms of Bill of Lading other liner documents, Intl conventions relating to Bill of Lading, paperless trading
V	The Exchange of goods transfer - Transfer of funds from country to country, methods of payments in International trade who are the merchants, International contracts of sale INCO terms; Legal aspects of the liner trades - The carrier insurance the carrier's liability for the cargo the liabilities of the agent, legal aspects of the Bill of Lading, cargo claims general average (GA), security, ISPS code.

Text & Reference Books:

1. Course Material Prepared by LSC
2. Ship Operation Management, Fujita, N.H. Publisher, 1974.
3. Ship Operation Management, Bertrams Publication, 2010.
4. Handbook of Ship Calculations, Construction and Operation, Charles H. Hughes, Wexford College Press, 2008.
5. Ocean Shipping - Elements of Practical Steamship Operation, Robert Edwards Annin, Thompson Press, 2010.

PORT TERMINAL LOGISTICS

Semester
IV

Course Type
General

Code
L21C22

Hours
60

Credits
4

Version
2021-22

COURSE OBJECTIVES:

- To develop competencies and knowledge of students to Port terminals logistics professionals
- To orient students in the field of Logistics
- To help Students to understand Port terminals logistics

LEARNING OUTCOMES:

- Students will be able to apply the Basic knowledge of Port terminals Logistics in the real-life situation
- This subject will enable them to enhance their ability and professional skills in Logistics

Unit	Topics
I	Difference between Major and Minor Ports - Ports in India - Natural Harbours - New Ports to be developed in India - Major Ports of the World - Largest Port in the world - Port Officials and their roles - Role of Ports - Who are Port users
II	Container Terminals - Privatisation of Terminals - Reason for Privatisation - Major Terminal Operators in India - Terminal Operators of the world - Privatisation the need of the hour - Agreement between and existing Port Terminal and the new operator
III	Import Cycle - Export Cycle - Positions and Places in a Terminal - Facilities in a Terminal - Container Monitoring and stacking - CFS inside a Terminal - Reasons for Congestion of a terminal - de-congesting the terminal - Window system in a terminal.
IV	Major Port Trust Act - Port as a custodian of the cargo - Transit sheds - Cargo receivers - Wharfs and Berths - Various berths in a Port - Meaning of Berth Restrictions - Port equipment's and damage - Extra services - Berth reservation schemes
V	Port Tariff - Pilots and their duties - Tugs and its usage - Night navigations - Light Dues - Tariff Authorities of Major Port - Revision of rates - Port Trustees - Safety Procedures - Introduction of ISPS - Damage to Port property by ships - Compensation and confiscation of cargo to adjust dues

Text & Reference Books:

1. Course Material Prepared by LSC
2. Major Port Trust Act – Government of India
3. Port Industry Statistics, American Association of Port Authorities
4. AP MOLLOR Guide book on Terminal
5. DUBAI PORT AUTHORITIES Manual

DATA ANALYSIS USING SPREAD SHEETSemester
IVCourse Type
GeneralCode
L21C23Hours
45Credits
3Version
2021-22**COURSE OBJECTIVES:**

This course is designed with the view of making the student skilful at

- Performing data analysis using spreadsheet (MS Excel)
- Creating pivot tables from a range with rows and columns in Excel.

LEARNING OUTCOMES:

- Support the E communication effectively with help of Spread Sheet
- Summarize data with data analysis, Pivot Tables, and Pivot Charts.
- Work with charts and the drawing tools.
- Import and export data from other applications.

Unit	Topics
I	Introduction to Excel, About Excel & Microsoft, Uses of Excel, Excel software, Spreadsheet windowpane, Title Bar, Menu Bar, Standard Toolbar, Formatting Toolbar, the Ribbon, File Tab and Backstage View, Formula Bar, Workbook Window, Status Bar, Task Pane, Workbook & sheets Columns & Rows
II	Selecting Columns & Rows, Changing Column Width & Row Height, Auto fitting Columns & Rows, Hiding /Unhiding Columns & Rows, Inserting & Deleting Columns & Rows, Cell, Address of a cell, Components of a cell – Format, value, formula, Use of paste and paste special Functionality Using Ranges. Using Ranges, Selecting Ranges, Entering Information into a Range, Using AutoFill
III	Creating Formulas, Using Formulas, Formula Functions – Sum, Average, if, Count, max, min, Proper, Upper, Lower, Using AutoSum, Advance Formulas Concatenate, Lookup, Lookup, Match, Count if, Text, moving between Spreadsheets, Selecting Multiple Spreadsheets, Inserting and Deleting Spreadsheets Renaming Spreadsheets, Splitting the Screen, Freezing Panes, Copying and Pasting Data between Spreadsheets, Hiding, Protecting worksheets
IV	Creating Charts, Different types of chart, Formatting Chart Objects, Changing the Chart Type, Showing and Hiding the Legend, Showing and Hiding the Data Table Data Analysis Sorting, Filter, Text to Column, Data Validation
V	PivotTables, Creating PivotTables, manipulating a PivotTable, Using the PivotTable Toolbar, Changing Data Field, Properties, Displaying a PivotChart, Setting PivotTable Options, Adding Subtotals to PivotTables Spreadsheet Tools, Making Macros, Recording Macros, Running Macros, Deleting Macros

Text & Reference Books:

Microsoft Excel 2016: Comprehensive, Freund, Starks, and Schmieder, Cengage Learning, 2017, ISBN: 9781305870727.

COMMERCIAL GEOGRAPHY

Semester
IVCourse Type
GeneralCode
L21C24Hours
45Credits
3Version
2021-22**COURSE OBJECTIVES:**

- To acquaint the students about dynamic aspects of Commercial Geography.
- To acquaint the students about dynamic nature of Industrial field in India.
- To make the students of commerce aware about the relationship between the geographical factors and economic activities

LEARNING OUTCOMES:

- Acquiring Knowledge of Physical Geography
- Ability of Problem Analysis:
- Knowing the bases of commercial and marketing activities related to the earth.

Unit	Topics
I	Introduction to Geography Definition, nature and scope, relation with other branches. -Meaning of environment, physical or natural environment and cultural or manmade environment, -Commercial activities: Primary, secondary, tertiary, and quaternary activities, -Factors affecting commercial activities of man, Physical or natural factors: Location, climate, physiography.
II	Physical Factors Location of India in the World map, longitudes, latitudes and equator, Size of country including land mass, List of States their capitals, important cities and towns / Union Territories,-India's population size & distribution-India and the world, its neighbours-Exercise: Oxford school atlas Maps – India Political Map, Population Map, Locating states / cities on maps.
III	Transportation systems in India Inland & Overseas. Roadways -National Highway including Golden Quadrilateral, E-W corridor, N-S corridor, NH numbers. Railway junctions & connections. Airports international & domestic airport locations. Seaports-Industrial belts in India, Industrial Estates, SEZS, Export Processing zones, Textile zones, Leather zones, chemical zones, etc. {Oxford School Atlas provides for following maps with detailing: India – Road & inland waterways (pg. 51) / India – Railways (pg. 52) / India – Air and sea routes (pg. 53) -Exercise: Locating NHs, Junctions, Airports, Seaports on Maps}
IV	Introduction to World Time Zone Time Zones – Greenwich Mean Time-Calculation of time zone – by using longitude-Local Time-Standard Time-International Date Line -Exercise: Various exercises can be prepared around time zones including calculation / use of maps, Local time of Flight in origin country to Local time of flight in destination country etc. {Oxford School Atlas provides for following map: World Time Zone (pg. 122)}.
V	IATA Airport Codes & World Geography Introduction to IATA Airport Codes, its history importance and use in the air transportation business.-Continents of the world and the counties in these continents and regions-Capital of the countries, important and commercial cities in the world,-Currencies of the countries-Important commercial Airports, Travel time for shipments/ cargo to various countries from India and vice versa.-Trade lines to the world from India-Types of trade between the countries- {Oxford Atlas – World Political & Physical Map}

Text Books:

1. Course material from LSC
2. NCERT Class 6 / 9 / 10 Geography
3. Oxford School Atlas – Latest Edition should be used.

LOGISTICS NETWORK DESIGN

Semester
IVCourse Type
DomainCode
L21C25Hours
45Credits
3Version
2021-22**COURSE OBJECTIVES:**

- To develop competencies and knowledge of students to become Logistics network design professionals
- To orient students in the field of design and configuration of the logistics network.
- To help Students to understand Logistics network design

LEARNING OUTCOMES:

- Students will be able to apply the Basic knowledge of design and configuration of the logistics network. in the real-life situation
- This subject will enable them to enhance their ability and professional skills in design and configuration of the logistics network.

Unit	Topics
I	<p>Introduction - Components of Logistics network: Facilities - Plants/Vendors - Ports - - Warehouse Retailers/ Distribution Centres - Customers - Raw materials and finished products that flow between the facilities.</p> <p>The three models of Network Design: 1. Logistics network design with differentiated delivery lead time 2. Logistics network design with price discount 3. Consolidated logistics network design using consolidation hubs</p>
II	<p>Key issues of Network design: Pick the optimal number, location, and size of warehouses and/or plants - Determining optimal sourcing strategy - Which plant/vendor should produce which product? - Determining best distribution channels - Which warehouses should service which customers?</p>
III	<p>Data required for Network Design: A listing of all products - Location of customers, stocking points and sources - Demand for each product by customer location - Transportation rates -Warehousing costs - Shipment sizes by product - Order patterns by frequency, size, and season, content - Order processing costs - Customer service goals</p>
IV	<p>1. Determining best distribution channels - Which warehouses should service which retailers - The objective is to design or reconfigure the logistics network so as to minimize annual system-wide costs, including Production/ purchasing costs Inventory carrying costs, and facility costs (handling and fixed costs) Transportation costs.</p> <p>2. Find a minimal-annual-cost configuration of the distribution network that satisfies product demands at specified customer service levels.</p>
V	<p>1. Data Collection -information on :a) Location of customers, stocking points and sources—location theory- b) A listing of all products - c) Demand for each product by customer location—forecast technique – d)Transportation Cost - Transportation rates by mode—information system, like rating engine - e)Mileage estimation— f) Warehousing costs (handling and fixed)—inventory management g) Service level requirement—probabilistic technique h) Shipment sizes by product</p> <p>2. Data Aggregation - The impact of aggregate demand - a heuristic to aggregate data.</p> <p>3. Data Validation and Model</p> <p>4. Optimization.</p>

Text & Reference Books:

1. Course Material Prepared by LSC
2. Supply Chain Management: Logistics Network Design by Donglei Du, Faculty of Business Administration, University of New Brunswick, NB Canada Fredericton.
3. Joseph D. Patton, Logistics Technology and Management, Soloman, 1986.
4. Philip T. Frohne, Quantitative Measurements for Logistics, McGraw Hill, 2007

LOGISTICS 4.0Semester
IVCourse Type
DomainCode
L21C26Hours
45Credits
3Version
2021-22**COURSE OBJECTIVES:**

- To develop competencies and knowledge of students to understand the revolution in Logistics Industry
- To orient students in the field of Logistics
- To help students to learn the recent technology changes and challenges in Logistics Industry

LEARNING OUTCOMES:

- Students will be able to apply the basic knowledge of technology and ITC development
- This subject will enable them to enhance their ability and professional skills in Logistic

Unit	Topics
I	1.1 First Three Industrial Revolutions: Industry 1.0–3.0 1.2 Introduction to Industry 4.0 1.3 Digitalisation and the Connected Economy 1.4 Drivers, Enablers, Compelling Forces and Challenges for Industry 4.0 1.5 The Journey so far: Developments in USA, Europe, China, and other countries 1.6 Comparison of Industry 4.0 Factory and Today's SMART Factory 1.7 Trends of Big Data (Evolution) along with the Maturity framework and Predictive Analytics for Smart Business Transformation
II	2.1 Evolution of Logistics 2.2 Introduction to Logistics 4.0 2.3 Digital Transformation of Supply Chain Management 2.4 Advanced robots, Augmented Reality, Digital Twins 2.5 Simulation — Network simulation and optimization 2.6 The Industrial Internet of Things 2.7 Cloud Computing 2.8 Cyber Security 2.9 Big data and analytics – Data Warehouse v/s Data Mart
III	3.1 Digitalization of Logistics and Challenges in Logistics 4.0 3.2 Inventory Control Systems (ICS)-MRP-1-MRP-2-ERP-1 3.3 The Internet of Things 3.4 Challenges of The Internet of Things 3.5 Changes in Business Models and Production Processes 3.5 Telematics Technology – Application in Logistics
IV	4.1 Technology in Procurement 4.0 (Consignor Inventory Model) 4.2 Technology in Inventory Management 4.0 (Impact of Digital Technologies on the Inventory Management Techniques) 4.3 Technology in Logistics and Warehousing 4.0 4.4 Logistics and Supply Chain Analytics
V	5.1 Business issues in Logistics 4.0 5.2 Opportunities and Challenges 5.3 Future of Works and Skills for Workers in the Logistics 4.0 Era 5.4 Advantages and disadvantages of Logistics 4.0 5.5 Strategies for competing in a Logistics 4.0 world

Specialisation Module – Group A - Course I**INTRODUCTION TO AVIATION INDUSTRY & AIRPORT OPERATIONS**Semester
IVCourse Type
GeneralCode
L21C27AHours
45Credits
3Version
2021-22**COURSE OBJECTIVES:**

- To develop competencies and knowledge of students to become Aviation Professionals
- To help Students to understand Fundamentals of Aviation Industry & Airport Operations

LEARNING OUTCOMES:

- Students will be able to apply the Basic knowledge of Aviation and Airport Operations in the real-life situation
- This subject will enable them to enhance their ability and professional skills in the Aviation Industry & Airport Operations

Unit	Topics
I	History of Aviation & Key Organizations in the Aviation Industry a. History of Aviation through the ages-Origins in Greek Mythology- The Wright Brothers- Aviation in the era of World War 1 & 2- Commercial Aircraft Era- Modern Jetliners b. Key Organizations in the Aviation Industry- 1. ICAO- International Civil Aviation Organization, 2. IATA - International Air Transport Association 3. MoCA - Ministry of Civil Aviation, 4. DGCA - Directorate General of Civil Aviation 5. AAI- Airports Authority of India, 6.AAICLAS- Airports Authority of India Cargo Logistics Allied Services 7. AERA- Airport Economic Regulatory Authority 8. BCAS- Bureau of Civil Aviation Security
II	Freedoms of the Air & the Airline Business a. Freedoms of the Air- Overview- Nine Freedoms of the Air b. Airline Business- i Business Models- Legacy, Low Cost, Charter, Regional, Cargo & Hybrid ii Airplane Manufacturers- Primary Manufacturers- Boeing, Airbus and others iii Narrow Body v/s Wide Body- Definition & Features iv The Airline Industry as a Business- Key Functions in the Airline Business v Airline Codeshares & Alliances- a. Concept, b. Key Benefits, c. Major Airline Alliances vi Airline Cabin Classes- First, Business, Premium Economy & Economy
III	World Geography & Airline Communication Protocol Traffic Conference Areas, Time Zones, Codes- Country, City, Carrier, Currency, Aircraft Registration, Airline Phonetics
IV	Airport Operations a. Key Stakeholders, Airport Types, Airport Revenue Sources, Airport Functional Layout- Landside, Governmental Agencies at Airport, Baggage Handling, Airside Operations b. Airport as an Operational System- Infrastructure & Facilities, Airport Operations Control Centre (AOCC), Airport Collaborative Decision Making (ACDM), Key Information Technology Systems at Airports
V	Concessionaire Activities at Airports (terminology restricted to Indian scenario) a. Non-Aero Activities- Retail, Food & Beverage, Real Estate, Car Rentals Car Parking, Currency & Banking, Advertising b. Maintenance Repair & Overhaul (MRO)- Types of MRO Models c. Ground Handling i Concept, ii Self-Handling V/s Outsourced Handling iii IATA Standard Ground Handling Agreement

Text & Reference Books:

- 1 Course Material Prepared by LSC
2. Airport Operations- Norman Ashford, Pierre Coutu, John Beasley- McGraw-Hill Education; 3rd edition (16 December 2012)
3. Principles of Airport Economics- P.S. Sengupta- Excel Books (1 December 2007)
4. Managing Airports- An International Perspective- Anne Graham-Routledge; 5 edition (June 9, 2018)
5. IATA Airport Handling Manual- 40th edition- Year of Publication- 2020
6. IATA Ground Operations Manual- 9th edition- Year of Publication-2020

Specialisation Module – Group B - Course I

FIRST MILE OPERATIONS

Semester
IV

Course Type
General

Code
L21C27B

Hours
45

Credits
3

Version
2021-22

COURSE OBJECTIVES:

- To understand the First Mile operational processes in e-commerce logistics.

LEARNING OUTCOMES:

THE STUDENTS WILL LEARN:

- Basics of First Mile operations.
- Shipment pickup operations.
- Different types of shipment processing operations at Processing Centers.
- Layout of a Processing Centre.
- Key challenges in First Mile operations and First Mile metrics.

Unit	Topics
I	Role of First Mile in E-Commerce Logistics Difference between First Mile, Line Haul and Last Mile operations. -First Mile Operations - Overview. -Why is First Mile operations important in e-commerce logistics-First Mile process flow.
II	Shipment Pickup Operations Shipment pickup process. -Pickup operations staff - roles and responsibilities. -Pickup coordination. -Safety and security of shipments during pickup-Pickup documentation.
III	Shipment Processing Operations Primary and secondary processing. -Bagging operations. -Manual processing operations-Automated processing operations
IV	Layout of A Processing Centre Inbound operations-Processing Operations-Outbound Operations-Safety and security-Processing Centre staff - roles and responsibilities
V	First Mile Analytics and Metrics Productivity-Pickup operations metrics-Processing operations metrics-First Mile dashboard. Tools and Applications Pickup tools and applications-Processing tools and applications-Exceptions in First Mile and impact on operations-Tools and communication to resolve exceptions.

Text & Reference Books:

- Course Material Prepared by LSC

Specialisation Module – Group C - Course I**MULTI-MODAL TRANSPORTATION**Semester
IVCourse Type
GeneralCode
L21C27CHours
45Credits
3Version
2021-22**COURSE OBJECTIVES:**

- Introduce Multi-modal and Intermodal Transport concepts.
- Explain Regulatory framework and policies for Multi-modal transportation.
- Describe Indian Railways' initiatives to promote Multimodal Logistics in India.
- Overview evolution of infrastructure facilitating Multi-modal Logistics in India.

LEARNING OUTCOMES:

After completing this Course, the student will have the following learnings:

- The importance and role played by Multi-modal transport in the efficient and cost-effective movement of cargo
- Types of multi-modal movement and the role of containerisation for security and speed
- The provisions and procedures for Exim trade and INCOTERMS
- Indian Government's policies and vision R for development of seamless multi-modal transport.

Unit	Topics
I	Transportation Systems & Multi modal Transport –Concept of Multi modal & Intermodal Transport – introduction to Multi modal transport, the difference between Multi modal and Intermodal transport-Type of transport Modes – detail and characteristics of air, road, rail, water, pipelines, package carriers-Need, Aim and Key Issues of Multi modal transport.
II	How to organise Multi modal transport-Role of Containerisation in MMT- history, utility, types, ease of handling, cost saving-Types of Multi modal transport – combined container transport, rolling Road & forwarding of trailers, RORO & LASH transportation-National Multi modal Transport Committee (NMTC) and Logistics Policy of India – key features and importance
III	Multi modal Transportation Act & Procedures-MMTG Act of 1993-Custom procedures for Export & Import - Bill Of Lading – Hague Rules, Visby Rules, Hamburg Rules, Voyage by Sea-INCOTERMS – meaning, explanation, list, and types
IV	MMT and Indian Railways-PFT Policy – maintenance of rolling stock, cargo handling, customs, etc-Warehousing Policy – stuffing, de-stuffing, stacking, use of MHE, etc-Layout and design of Multi modal Logistics parks
V	Multi modal transport & Practice Today-India's growing conflict between Trade & transport – issues, policy, problems & pricing-Integrated Transport – Bharatmala, Sagarmala, IWT, DFC, the concept of ICP (International Check Posts-Scenario in India and neighbouring countries with a case study

TEXT BOOKS

- 1 Course Material Prepared by LSC

Specialisation Module – Group A - Course II

INTRODUCTION TO AIR CARGO INDUSTRY

Semester
IV

Course Type
General

Code
L21C28A

Hours
45

Credits
3

Version
2021-22

COURSE OBJECTIVES:

- To develop competencies and knowledge of students to become Air Cargo Professionals
- To help Students to understand Fundamentals of Air Cargo Industry

LEARNING OUTCOMES:

- Students will be able to apply the Basic knowledge of Air Cargo Industry in the real-life situation
- This subject will enable them to enhance their ability and professional skills in the Air Cargo Industry

Unit	Topics
I	History of Air Cargo & Multi Modal forms of Transport a. History of Air Cargo & Mail, Air Freight, Air Express, Overnight Air Express & Air Mail b. Other Multi Modal forms of Transport- Rail, Sea & Surface Transport- Key Concepts
II	Key Organizations Facilitating Air Cargo International Air Transport Association (IATA), International Civil Aviation Organization (ICAO), International Federation of Freight Forwarders Association (FIATA), The International Air Cargo Association (TIACA)
III	Air Cargo Business Models Freighters, Charters, Integrators, Combination Carriers, Systems), Couriers, E-commerce, Postal mail a. Key Concepts- Brief Introduction to the Business Models b. Impact of various Business Models in relation to geography, size and scope
IV	Key Stakeholders & Key Terminologies a. Key Stakeholders- Airports, Airlines (Direct), Airlines through General Sales Agents (GSA) or General Sales & Service Agents (GSSA), Shippers, Freight Forwarders, Custom Brokers, Consolidators, Trucking b. Key Terminologies & Abbreviations
V	Training & Development in Air Cargo Industry a. Importance of Training in the Aviation & Cargo Industry b. Areas of Training in the Air Cargo Industry c. Key Organizations facilitating Training & Development in the Aviation & Air Cargo Industry.

Text & Reference Books:

1. Course Material Prepared by LSC
2. Air Cargo Management- Air Freight and The Global Supply Chain- Michael Sales- Routledge (2016)
3. Air Cargo and Logistics - Classics and Contemporary practice by Rico Merket and Jackie Walters- Academic Publishers (01 June, 2019)
4. Moving Boxes by Air - The Economics of International Air Cargo by Peter S. Morrell and Thomas Klein - Routledge; 2 edition (19 October 2018)

Specialisation Module – Group B - Course II**LAST MILE OPERATIONS**Semester
IVCourse Type
GeneralCode
L21C28BHours
45Credits
3Version
2021-22**COURSE OBJECTIVES:**

- To understand Last Mile Operations in E-Commerce

COURSE OUTCOME:

The students will be able to:

- Understand the basics concept of Last mile logistics in E-Commerce
- Understand the processes involved in Last mile logistics
- Understand various metrics and customer services processes to be followed in last mile logistics
- Explain the prospects of last mile logistics.

Unit	Topics
I	Introduction 1.1 What is Last Mile in Ecommerce? 1.2 Importance of Last Mile in the supply chain 1.3 Last Mile Delivery challenges for ecommerce 1.4 Trends in Last Mile delivery 1.5 Route optimization in Last Mile operations
II	Last Mile Processes 2.1 Delivery Process & its challenges 2.2 Reverse pickup process in Last mile operations 2.3 Challenges in Reverse Pickup process 2.4 Tools and applications in Last Mile operations 2.5 Considerations for effective last mile logistics strategy
III	Metrics 3.1 Metrics to measure in last file 3.2 Automation and technology driving metrics.
IV	Customer service 4.1 Customer service and its importance 4.2 Good and bad customer service (Dos and Don'ts of customer service) 4.3 Relationship between metrics and customer service.
V	Prospects of Last Mile Logistics- 5Hrs 5.1 Innovations in Last Mile Logistics 5.2 Technology Trends in Last Mile Delivery 5.3 Last Mile Delivery Market Future Prospects

Text & Reference Books:

1. Course Material Prepared by LSC

Specialisation Module – Group C - Course II

COMMERCIAL ASPECTS OF TRANSPORTATION

Semester
IVCourse Type
GeneralCode
L21C28CHours
45Credits
3Version
2021-22**COURSE OBJECTIVES:**

- To highlight vital part of commercial considerations in providing transport services for Freight and Passengers movement.
- To Understand the importance and need for marketing and strategies involved.
- To Describe the principles in fixing Railway Freight and Rates
- To evaluate Competition in rates of Road and Rail mode of transportation.

LEARNING OUTCOMES:

- Develop a clear perspective of various commercial aspects in transportation
- Distinguish between the Operational feasibility of a work and its commercial viability
- Know the issues involved in booking and reservation of passengers,
- Know the various types of costs involved and understand the concept of cost-of-service vs value of service

Unit	Topics
I	Commercial Aspects in Transportation – A Perspective-Role and importance of Commercial Aspects, relative strengths of rail vs road-Concept of commercial viability vis a vis operational feasibility-Issues/ functions included in the commercial aspects, organisational set up to handle these
II	Commercial Aspects involving Passenger transportation –Passenger Services on Indian Railways; Booking and Reservation of passengers, Various class of services, types of tickets, concessions etc-Passengers Services in Road Sector, A state subject- differences from State to state-Supplementary and related services such luggage, parcel, refunds, catering etc.
III	Commercial Aspects involving Goods / Freight transportation–Different components of freight traffic, Booking and delivery of freight traffic on Railways, Demurrage and Wharfage, sidings-Booking and delivery of goods in roadways, agencies involved and their role-Claims and liabilities, Organisational set-up and procedure for Claims' compensation,
IV	Pricing of Transport-Basic consideration in pricing; Different type of costs involved in computing price, Relativity index of passenger fares in Indian Railways; surcharges and discounts-Principles of classification and Rate fixation and routing of traffic-Cost of service vs value of service, Cross subsidisation etc
V	Marketing Strategies for Commercial growth –Need for marketing, Rail vs Road: Complementary and not competitive role, High profit yielding commodities-Incentive schemes, IT-enabled user-friendly solutions for Booking, payment, tracking consignments and trains, Passenger movement – PRS, etc-Future trends: technology-induced improvements in various aspects of commercial working

Textbooks

1. Course Material Prepared by LSC



Logistics Sector Skill Council
‘Temple Towers’, Ground Floor
476, Anna Salai, Nandanam, Chennai - 600 035, India
www.lsc-india.com