



Certified in Logistics, Transportation and Distribution

**Air Infrastructure and Types of
Carriers and Containers**



CLTD On-Demand Training for Self-Study Professionals

Are you preparing for the CLTD certification through self-study? As an experienced supply chain professional, you already have strong practical knowledge—but some topics may still need expert clarification. Fhysics Business Consultants bridges that gap with on-demand, topic-oriented CLTD training sessions designed specifically for self-learners.

Whether you need guidance on a single concept or an entire module, our focused training helps you master complex areas quickly and confidently. Get personalized support, strengthen your exam readiness, and elevate your supply chain expertise—on your schedule.

Mobile: +91-900-304-9000 (WhatsApp)

Email: Certifications@Fhysics.net



Air Infrastructure and Types of Carriers and Containers

1. Global Air Transport Network Structure

Understanding how the global air transport network is organized is essential to grasp air logistics. This includes hubs, spokes, international gateways, regional airports, and how traffic is routed through them. Airlines choose hub-and-spoke or point-to-point models to balance demand, fleet size, and cost. Infrastructure such as runway capacity, aprons, cargo terminals, and air traffic control systems determine airport throughput. Logistics planners must understand how these structural elements influence transit times, reliability, cost, and route planning. A strong grasp of network structure helps predict congestion, identify optimal shipment paths, and anticipate disruptions.

2. Airport Classification and Capabilities

Airports are classified by size, function, and cargo-handling capability. Categories include international, regional, cargo-specialized, and multimodal airports. Each airport type has different runway requirements, cargo terminal sophistication, customs processing speed, and storage facilities. Cargo-focused airports may provide advanced cold chain infrastructure, 24/7 operations, and minimal passenger congestion, which improves efficiency. Understanding airport classifications supports carrier selection and helps determine constraints such as maximum aircraft size, preferred routes, and cost differentials. Knowing the capabilities and limits of departure/destination airports is vital for risk mitigation and effective shipment planning.

3. Air Cargo Terminal Operations

Air cargo terminals serve as the core processing centers for freight movement. They handle acceptance, security screening, documentation, build-up and breakdown of unit load devices (ULDs), temporary storage, and customs procedures. Terminals are equipped with docks, cool rooms, automated handling systems, X-ray/scanner areas, and sorting lines. Efficient terminal operations minimize dwell time and protect cargo integrity. Understanding these processes allows logistics professionals to anticipate handling times, ensure proper documentation, and manage special cargo (e.g., hazardous, temperature-sensitive goods). Smooth terminal flow directly impacts service reliability and customer satisfaction.

4. Types of Air Carriers: Passenger Belly Carriers

Passenger airlines often transport cargo in the “belly” of aircraft, leveraging unused baggage space. This mode provides frequent departures, extensive global routes, and relatively fast transit. However, belly cargo is constrained by aircraft type, passenger load, and baggage priority. Capacity availability may fluctuate seasonally or based on passenger demand. Logistics professionals must understand the limitations and advantages of belly freight, including cost structures, service reliability, loading restrictions, and compatibility with unit load devices. Belly carriers are well-suited for smaller, high-value shipments requiring frequent connectivity and shorter lead times.

5. Types of Air Carriers: All-Cargo Freighters

All-cargo airlines operate aircraft designed solely for freight, offering dedicated capacity, flexible loading, and specialized

handling. Freighters accommodate outsized, heavy, or dangerous cargo that cannot be carried in passenger aircraft. They also allow nose-loading, side-loading, and use of main deck capacity. Freighter networks may not be as extensive as passenger networks, but operations are tailored to cargo needs, ensuring higher reliability of capacity and schedules. Understanding freighter capabilities helps in planning large-volume shipments, charter operations, and time-critical supply chains requiring greater control over cargo movement.

6. Integrated Express Carriers

Integrated express carriers such as FedEx, UPS, and DHL offer door-to-door service using dedicated air fleets, ground transportation, and automated sorting hubs. They provide time-definite services, extensive tracking, customs brokerage, and streamlined documentation. Such carriers excel in small-package, e-commerce, and high-value shipments requiring rapid delivery. Their networks rely on central superhubs (e.g., Memphis, Louisville, Leipzig) with overnight cutoffs designed for next-day delivery. Understanding their capabilities and limitations helps logistics professionals determine when premium cost is justified by speed, reliability, and visibility.

7. Charter Air Services

Charter services allow shippers to lease an entire aircraft for dedicated transportation. This mode is ideal for oversized cargo, project logistics, humanitarian aid, or time-critical shipments not suited to scheduled flights. Charters offer complete route flexibility and fast transit but come at significantly higher costs. Logistics planners must

understand aircraft availability, airport slot constraints, payload-range capability, and loading/unloading requirements. Knowledge of charter contracting, regulatory approvals, and risk management is essential to ensure legal compliance and cost-effective execution.

8. Unit Load Devices (ULDs): Types and Functions

ULDs are standardized containers and pallets used to load cargo onto aircraft. They improve handling efficiency, protect cargo, and maximize aircraft space utilization. Common ULD types include LD-3 containers, LD-6 and LD-7 pallets, igloos, and temperature-controlled ULDs. Each type fits specific aircraft contours and doors. Understanding ULD dimensions, tare weight, load limits, and compatibility ensures safe and efficient cargo build-up. Logistics professionals must also understand ULD tracking, leasing, maintenance, and security requirements to ensure availability and prevent delays.

9. Aircraft Types and Cargo Capacities

Different aircraft models—narrow-body, wide-body, passenger, and freighters—offer varying cargo capacities. Wide-body aircraft such as the Boeing 777 or Airbus A350 can carry significant belly cargo, whereas narrow-body fleets have limited capacity. Freightier aircraft such as Boeing 747F, 777F, or 767F accommodate pallets on both main and lower decks. Each aircraft type has unique loading limits, door sizes, and compatibility with ULDs. Knowledge of aircraft characteristics helps in planning shipment consolidation, routing, and forecasting available capacity.

10. Airside Infrastructure and Ground Handling

Airside operations include aircraft parking stands, taxiways, aprons, and ground support equipment (GSE). Ground handling activities—loading, unloading, towing, fueling, and aircraft servicing—affect turnaround time and cargo flow. Efficient ground infrastructure reduces bottlenecks and improves schedule reliability. Understanding airside processes helps logistics planners anticipate operational risks such as congestion, slot delays, or handling limitations. Safety protocols, GSE availability, and specialized loading ramps for freighters are also critical for handling special cargo requirements.

11. Runway and Airfield Requirements

Runway length, pavement strength, lighting, instrument landing systems (ILS), and air traffic control capacity determine what aircraft can operate at a given airport. Heavy freighters require long, reinforced runways, limiting their use at smaller airports. Weather conditions and terrain further affect runway availability and operational reliability. Understanding these constraints helps in evaluating route feasibility, airport suitability, and potential service disruptions. Proper knowledge helps logistics planners match cargo needs with airport capabilities.

12. Cargo Handling Equipment

Air cargo handling requires specialized equipment including high-loaders, pallet transporters, forklifts, dollies, container loaders, and automated storage systems. This equipment supports ULD movement, build-up, and breakdown. Efficient handling equipment reduces physical damage, enhances speed, and ensures safety. Logistics professionals

must understand equipment capabilities to anticipate handling times and special requirements for perishable, hazardous, or temperature-sensitive cargo. Matching equipment capacity to cargo type and volume is essential for efficient air operations.

13. Special Cargo Handling (Dangerous Goods, Perishables, Pharma)

Air transport frequently carries hazardous materials, perishables, live animals, and pharmaceuticals. Each category requires compliance with strict IATA regulations. Knowledge of packaging, labeling, documentation, and temperature-control protocols is essential. Special cargo often requires dedicated storage zones, controlled handling, and trained personnel. Understanding these requirements ensures safety, regulatory compliance, and cargo integrity. Logistics planners must be able to coordinate with carriers and handling agents to ensure smooth processing of sensitive freight.

14. Temperature-Controlled Air Cargo Systems

Cold chain logistics is critical for food, chemicals, and pharmaceuticals. Infrastructure includes refrigerated storage, active and passive containers, temperature-controlled ULDs, and real-time monitoring devices. Active containers use battery-powered cooling systems, while passive containers rely on insulation and coolant packs. Understanding these systems ensures cargo integrity across airports, terminals, and aircraft environments. Logistics professionals must consider factors like pre-conditioning, tarmac exposure, transit times, and regulatory compliance for temperature-sensitive goods.

15. Air Cargo Security Requirements

Air cargo security is strictly regulated to prevent threats. Requirements include X-ray screening, explosive trace detection, canine units, and secure supply chain programs such as TSA's Known Shipper, Regulated Agent, or IATA Secure Freight. Understanding security layers ensures compliance, reduces delays, and protects goods. Logistics professionals must prepare correct documentation, ensure proper packaging, and comply with chain-of-custody protocols. Non-compliance can lead to penalties, rejections, or extended inspections.

16. Customs and Border Clearance Procedures

Customs processing influences air cargo speed. Procedures vary by country but typically include documentation checks, duties/tax calculation, inspections, and risk profiling. Some airports offer expedited clearance programs (e.g., Authorized Economic Operator). Logistics professionals must understand airway bills, commercial invoices, packing lists, and certificates of origin. Knowledge of customs systems helps predict clearance times, reduce delays, and manage regulatory risks. Pre-clearance and digital submission systems further enhance efficiency.

17. Air Freight Tariff Structures and Cost Drivers

Air freight pricing depends on chargeable weight (actual vs. volumetric), service level, route, seasonality, fuel surcharges, security fees, and capacity availability. Understanding how tariffs are structured enables cost optimization and accurate quotations. Forwarders often negotiate block space agreements and spot rates depending on market demand. Being proficient in tariff calculations

helps logistics professionals choose the most economical carrier while ensuring service reliability and speed.

18. Multimodal Integration with Air Cargo

Air transport often connects with road, rail, or sea for first-mile and last-mile delivery. Efficient multimodal integration requires synchronized schedules, specialized transfer facilities, and appropriate packaging. Airports with strong multimodal infrastructure reduce dwell time by providing direct links to distribution centers, logistics parks, or seaports. Understanding multimodal planning enhances flexibility and cost control, especially in complex international supply chains.

19. Environmental and Sustainability Issues in Air Cargo

Air cargo emits significant greenhouse gases, prompting airlines and airports to adopt sustainability measures such as fuel-efficient aircraft, sustainable aviation fuels (SAF), route optimization, and electrified ground equipment. Regulations such as CORSIA (Carbon Offsetting and Reduction Scheme for International Aviation) influence carrier operations and pricing. Understanding sustainability issues helps logistics professionals align shipments with corporate sustainability goals and evaluate green logistics solutions.

20. Emerging Technologies in Air Cargo Operations

Technologies such as digital airway bills, IoT sensors, AI-based forecasting, autonomous ground equipment, drones, and automated cargo terminals are transforming air logistics. These technologies enhance visibility, reduce handling errors, and increase forecasting accuracy.

Understanding their applications helps logistics professionals improve supply chain performance and adopt innovations early. Familiarity with emerging technology trends also supports better decision-making, cost control, and operational resilience.

Micro-Learning Programs in Supply Chain Management & Procurement



Enhance your professional edge with Fhyzics Business Consultants' Micro-Learning Programs in Supply Chain Management and Procurement. Designed as focused, two-hour Executive Development Programs, these sessions deliver practical insights and tools to solve real-world business challenges. Conducted in small batches for personalized learning, participants gain a deeper understanding of key supply chain and procurement strategies that drive efficiency and profitability. Each participant receives a certificate of completion, adding value to their professional profile and career growth. Whether you aim to advance in your current role or explore new opportunities, this program equips you with the knowledge and confidence to excel.



Micro-Learning Programs in Supply Chain Management



1. Fundamentals of Supply Chain Management
2. Supply Chain Planning and Optimization
3. Demand Forecasting Techniques
4. Inventory Control and Management
5. Distribution and Logistics Strategy
6. Warehouse Layout and Operations Efficiency
7. Supply Chain Risk Management
8. Supply Chain Performance Metrics (KPIs)
9. Lean Supply Chain Practices
10. Agile and Responsive Supply Chains
11. Sales and Operations Planning (S&OP)
12. Supply Chain Network Design
13. Supply Chain Digital Transformation
14. AI and Data Analytics in Supply Chain
15. Supply Chain Sustainability and Green Logistics
16. Reverse Logistics and Returns Management
17. Supply Chain Collaboration and Integration
18. Supplier Relationship Management in SCM
19. Global Supply Chain Strategy
20. Transportation Management Systems (TMS)
21. Inventory Optimization Models
22. Demand-Driven MRP (DDMRP) Concepts
23. Blockchain Applications in Supply Chain
24. Supply Chain Cost Reduction Techniques
25. SCOR Model and Process Improvement

Micro-Learning Programs in Supply Chain Management ...



26. Capacity Planning and Resource Allocation
27. Managing Supply Chain Disruptions
28. End-to-End Supply Chain Visibility
29. Cold Chain Logistics Management
30. Supply Chain Compliance and Ethics
31. Import–Export Procedures and Documentation
32. Managing Third-Party Logistics (3PL) Providers
33. Supply Chain Collaboration Technologies
34. Production Planning and Scheduling
35. Strategic Supply Chain Design Using Case Studies
36. Circular Economy in Supply Chain
37. Vendor-Managed Inventory (VMI)
38. Transportation Optimization Techniques
39. E-Commerce Supply Chain Models
40. Omni-Channel Fulfillment Strategies
41. Warehouse Automation and Robotics
42. SCOR DS Roadmap for Supply Chain Excellence
43. Customer-Centric Supply Chain Strategies
44. Supply Chain Finance and Working Capital Management
45. Supply Chain Data Visualization Using Power BI
46. Strategic Sourcing in Supply Chain Context
47. Supply Chain Benchmarking and Best Practices
48. Integrated Business Planning (IBP)
49. Supply Chain in Crisis Management and Recovery
50. Future Trends and Technologies in Supply Chain

Micro-Learning Programs in Procurement



1. Fundamentals of Procurement Management
2. Strategic Sourcing and Category Management
3. Supplier Selection and Evaluation
4. Contract Management Essentials
5. Cost and Price Analysis in Procurement
6. Negotiation Strategies for Procurement Professionals
7. E-Procurement and Digital Tools
8. Procurement Planning and Budgeting
9. Risk Management in Procurement
10. Supplier Relationship and Performance Management
11. Sustainable and Ethical Procurement
12. Total Cost of Ownership (TCO) Analysis
13. Make-or-Buy Decision Frameworks
14. Procurement Policies and Governance
15. Procurement in Public vs. Private Sectors
16. Procurement Audit and Compliance
17. Procurement Data Analytics and Reporting
18. Procurement Scorecards and KPIs
19. Strategic Supplier Partnerships
20. Category Strategy Development
21. Managing Global and Offshore Procurement
22. Negotiation Simulation Workshop
23. Contract Law for Procurement Managers
24. Cost Reduction Strategies in Procurement
25. Supplier Risk Assessment Models

Micro-Learning Programs in Procurement ...



26. Procurement Process Mapping and Improvement
27. Procurement Automation and AI Applications
28. Managing Procurement Teams Effectively
29. Procurement Ethics and Transparency
30. Procurement in the Digital Supply Chain
31. Vendor Consolidation Strategies
32. Spend Analysis and Optimization
33. Demand Forecasting for Procurement
34. E-Auction and Reverse Bidding Techniques
35. Inventory and Procurement Alignment
36. Procurement in Project-Based Organizations
37. Supplier Onboarding and Development
38. Procurement Market Intelligence
39. Measuring Supplier Innovation
40. Procurement in Times of Supply Disruption
41. Cross-Functional Collaboration in Procurement
42. Writing Effective RFPs, RFQs, and RFIs
43. Contract Negotiation Best Practices
44. Green Procurement and Circular Economy
45. Legal Aspects of Procurement Contracts
46. Performance-Based Contracting
47. Procurement Leadership and Strategic Influence
48. Cost Avoidance and Value Creation in Procurement
49. Managing Procurement with Power BI Dashboards
50. Future Skills and Trends in Procurement



Fhyzics Business Consultants Pvt. Ltd.

Professional Training Partner of ASCM, USA

www.Fhyzics.net

ASCM Referral Code
XEFGHYZ88

Certifications@Fhyzics.net
+91-900-304-9000

CLTD aspirants may buy the
CLTD Learning System and Examination
Credits directly through ASCM Portal.
When purchasing CLTD Examination
Credit, please enter Referral
Code **XEFGHYZ88** to receive CLTD
Recertification Guidance for life.