



Syllabus for the Courses
planned by the PM GatiShakti Committee of
Central University of Karnataka
in
Logistics and Supply Chain
Management
focusing on
Capacity Building to Promote
PM Gati Shakti Scheme



CENTRAL UNIVERSITY OF KARNATAKA

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Digital Innovations and Technology in Supply Chain Management

Name of the Academic Program: UG

Title of the Course: Digital Innovations and Technology in Supply Chain Management

L-T-P : T&P

Credits: 03

Total Marks: 75

Hrs: 45

Course Description:

Digital technologies have penetrated every aspect of modern business. The ability to execute any business model depends heavily on the approach adopted by firms in organizing their information architecture. This course will explore the role of information architecture on supply chain and logistics functions. The course will discuss dominant technologies traditionally used in planning, forecasting, scheduling and managing supply chains.

Course Learning Outcome:

1. To understand of existing supply chain and its challenges
2. Ability to find opportunities for supply chain transformation
3. Application of innovation and IT frameworks in the supply chain context of their domain
4. To design new strategy to mitigate the cyber risk towards an efficient supply chain in the modern context.

Unit-1

Volatility, Uncertainty, Complexity, and Ambiguity (VUCA) Environment, Business Needs, Understanding IT challenges and integrated business processes in supply chain and logistics, Opportunity Identification for Digital Transformation, Business models and Innovation frameworks for supply chain, Enterprise Systems for Supply chain, Data Lake and Data Integration.

Unit-2

Emerging technologies for Digital Transformation of supply chain, Application of AI, ML, IOT, Block chain, Robotics & Automation, and Drone technologies, Platform Economy and Eco-Systems, Product life cycle management for supply chain, Technology life cycle for supply chain management.

Unit-3

Web technologies & e-SCM applications, Understanding Risk & Cyber-attacks in supply chain, Security Controls and Information Security Posture, Cryptographic Algorithms and hashing systems, Analysing and assessing the risks, Application of Geospatial Technology and GIS for cyber secured Supply chain.

References

1. S. Carnovale, and S. Yeniyurt, (Eds.), Cyber Security and Supply Chain Management: Risks, Challenges, And Solutions (Vol. 1). World Scientific, 2021.
2. S. Chopra and D. V. Kalra, Supply Chain Management: Strategy, Planning and Operations. 7th Edn., Pearson Education (Singapore) Pte. Ltd., 2019.
3. H. Delfs and H. Knebl, Introduction to Cryptography: Principles and Applications. 2nd Edn. Springer, 2007.
4. A. M. Pagano and M. Liotine, Technology in supply chain management and logistics: Current practice and future applications. 1st Edn., Elsevier, 2019.
5. D. Simchi-Levi, P. Kaminsky, E. Simchi-Levi, R. Shankar, Designing and Managing the Supply Chain: Concepts, Strategies and Case studies, 3rd Edn., McGrawHill, 2019.
6. N. Vyas, A. Beije, and B. Krishnamachari, Blockchain and the supply chain: concepts, strategies and practical applications. 1st Edn., Kogan Page Publishers, 2019.

Air Cargo Management

Name of the Academic Program : UG
Title of the Course : Air Cargo Management
L-T-P : T&P Credits : 03 Total Marks: 75 Hrs : 45

Course Descriptions:

Air Cargo Management course deals with the shipment of goods by air and management of carriage. Upon completing this course the students will gain knowledge on airport operations, functions of key organizations related to air cargo industry, air cargo documentation, handling procedures of Special Cargo and Unit Load Device. The students will also be familiarized with the latest technological improvements on aviation safety and crisis management.

Course Learning Outcome:

1. Develops ethical managers with inter disciplinary knowledge in Air Cargo
2. Demonstrate knowledge and understanding of Air cargo and Documentation Process
3. Understand the concepts of air freight logistics and functions of key organizations related to the Air Cargo industry.
4. Evaluate and create strategies for crisis management of Airports
5. Familiarize the roles and functions of key organizations related to Air Cargo industry
6. Devise and implement the latest technological improvements on aviation safety and security

UNIT-I:

Airport Operations & Functions of key organizations related to Air Cargo industry

Air Terminal Planning, Design and Operation - Airport Operations - Functions of Airport Authority of India (AAI) & DGCA - Roles and Functions of IATA - FIATA - ICAO.

UNIT-II: Air Cargo Concept & Cargo Rates

Concept of Air Cargo - Types of Air Cargo (Domestic/International /Bonded Cargo) - General Cargo - Special Cargo - Difference between Air Cargo & Air Freight - Air Freight Logistics - Air Cargo Management - Air waybill (AWB) Concept - Functions of AWB - Features and format of AWB - Electronic Air Waybill - Certificate of Origin - Inspection Certification - Electronic Export Information Document (EEI) - Bill of Lading.

UNIT-III: Technological Improvements on Aviation Safety, Crisis Management and Special Cargo Handling

Contemporary Technological Improvements on Aviation Safety and Security - Microwave Holographic Imaging - Cargo Scanning - Passive radiation detectors - Body or Fire Security Scanner - New Generation of video Security Systems - Crisis management at Airport: Sop for Bomb Threat - Mitigating Hijack Crisis Situation - Different types of ULDs - Special Cargo Handling.

References

1. Andreas Wald et al., (2010). Introduction to Aviation Management. LIT Verlag Münster.
2. Paul Hertwig et al., (2010). Risk Management in the Air Cargo Industry. Diplomica Verlag; 1st edition.
3. Price Jeffrey et al (2016). Practical Airport Operations, Safety, and Emergency Management. Elsevier - Health Sciences Division.
4. Norman Ashford (2012). Airport Operations. McGraw-Hill Education. Third Edition.
5. N.V. Suresh et al., (2021). Logistics & Air Cargo Management. Iterative International Publisher IIP.
6. R. Thangamani (2021). Air Cargo Management. Bhavatharani Publications
7. <https://www.aai.aero/>
8. <https://dgca.gov.in/digigov-portal>
9. Michael Sales et al., (2023). Air Cargo Management: Air Freight and the Global Supply Chain. Routledge; 3rd edition
10. Emmy Arsonval Maniriho (2022). Aviation, Air Cargo and Logistics Management: A Manual for Air Cargo Handlers and Shippers. Notion Press.

RETAIL SUPPLY CHAIN MANAGEMENT

Name of the Academic Program : UG
Title of the Course : RETAIL SUPPLY CHAIN MANAGEMENT
L-T-P : T&P Credits : 03 Total Marks: 75 Hrs: 45

Course Learning Outcomes:

1. Describe the concepts and terms in Retail Supply Chain Management
2. Understand the process and stake holders of Retail Supply Chain Management
3. Best practices of Retail Supply Chain Management
4. Assessing the dynamics Retail Supply Chain Management
5. Explain the suitability of various Retail Supply Chain Models
6. Design suitable Retail Supply Chain Model for the business

Unit I: Introduction

Retail Supply Chain Management- Concepts and Evolution, Channels of Distribution, Impact of Consumer Behaviour and Consumption on Retail Supply chain. Traditional and Modern Retail Supply Chain, Rural and Urban Retail Supply Chain, and Various Stakeholders of Retail Supply Chain. Retail Formats, Rural Retailing, Retail Analytics; Customer-Driven Retailing.

Unit II: Supply Chain Management in Retailing

Inventory Planning, Integrated Supply Chain, Efficient Consumer Response, Collaborative Planning, Forecasting and Replenishment (CPR), Retail Automation.

Unit III: Omni channel Retailing

Distinguishing Multichannel and Omni channel, Omni channel Retailing Strategies, Online Retailing, Ecommerce and Mobile commerce, Online Retailing Models, Drivers and Barriers of Online Retailing.

References

1. Ayers, J. B., & Odegaard, M. A.(2017). Retail supply chain management. CRC Press.
2. Levy, M., Weitz, B. A., Grewal, D., &Madore, M. (2012) Retailing Management, New York: McGraw-Hill/Irwin

Agri-Food Supply Chain Management

Name of the Academic Program : UG
Title of the Course : AGRI-FOOD SUPPLY CHAIN MANAGEMENT
L-T-P : T&PCredits : 03 Total Marks: 75 Hrs: 45

Course Learning Outcome:

1. Describe the concepts and terms in Agri-Food Supply Chain Management
2. Understand the fundamentals and cross functional perspectives Agri-Food Supply Chain Management
3. Best practices of Agri-Food Supply Chain Management
4. Assessing the dynamics and cross-functional perspective of Agri-Food Supply Chain Management
5. Explain the suitability of various Agri-Food Supply Chain Models
6. Design suitable Agri-Food Supply Chain Model for the particular business

Unit I: Introduction to Agri-Food Supply Chain Management

Concepts of Agri-food supply chain, Agri-food silos, Storage of Agri-food, Interdepartmental linkage, Public procurement and distribution system, Roadways, Railways and Airways, Issues in interface complexities of vegetable supply chain, Cold supply chain management

Unit II: Resource Management

Material Resource Management: Essentials of Farm Business Management and sustainability, Efficient, Effective use of resources.

Human Resource Management Agri-food supply chain management: Leadership and people management.

Unit III: Supply Chain Network

Logistics and Transportation Network Design: Site Suitability – the concept of GIS, Identification of Suitable Locations for retail outlets, storage houses; Digital Supply Chain Management

Tracking of Vehicles through GNSS – the concept of GNSS, monitoring the supply chain through the vehicle tracking system. Real-time location tracking; Vehicle routing planning – identification best route to distribute goods from storage house to outlets. From outlets to consumers.

References

1. Madeleine Pullman and Zhaohui Wu: Food Supply Chain Management: Economic, Social and Environmental Perspective, Routledge
2. David Simchi-Levi, Philip Kaminsky and Edith Simchi-Levi: Designing and Managing Supply Chain, McGraw Hill
3. Paul Schonleben: Integral Logistic Management: Operations and Supply Chain Management within and across Companies, CRC (T& F Group)

E-commerce Supply Chain Management

Name of the Academic Program : UG
Title of the Course : E-commerce Supply Chain Management
L-T-P : T&P Credits : 03 Total Marks: 75 Hrs : 45

Course Description:

E-Commerce Supply Chain Management course imparts practical knowledge on e-commerce supply chain and operations to upskill students and thereby make them become effective supply chain management professionals in the e-commerce domain. The course also imparts the tools and techniques used for improving the performance of the e-commerce supply chain.

Course Learning Outcome:

1. Understand the different E-commerce models and the corresponding supply chain configurations.
2. Understand the various aspects of the E-commerce supply chain such as inventory management, returns management and last-mile delivery.
3. Understand the application of state-of-the-art technologies such as robotics, automation, drone delivery and associated risks in the E-commerce supply chain.
4. Understanding of Information security risks and cyber-attacks in e-commerce supply chain and mitigating the risks.

Unit-1:

Introduction to e-Commerce supply chain and its business models

Define e-commerce and describe how it differs from traditional-commerce. Discuss the origins and growth of e-commerce, Stages in e-commerce supply chain, Unique features of e-commerce technology and discuss their business significance. Major types of e-commerce business models, key components of e-commerce business models, B2C and B2B models and their corresponding supply chain configurations, Major B2C and B2B business models, Cross border e-commerce: Understanding the cross-border e-commerce and why it is important.

Unit-2:

Inventory management in E-commerce

What is E-commerce inventory management, why it is important, Challenges with inventory management in ecommerce, Inventory management strategies.

Returns management and reverse logistics

What is Reverse logistics? Reverse Logistics components, Five Rs of Reverse logistics, Reverse logistics examples, Importance of Reverse logistics to the e-commerce, Strategies to optimize Reverse logistics and its benefits.

Last mile delivery

What is last-mile e-commerce and its significance, Last mile delivery challenges in e-commerce logistics, challenges in last mile e-commerce, Benefits of last mile delivery solution.

Unit-3:

Digitization in e-commerce supply chain:

Robotics and Automation: Automated fulfilment and order processing, robotic material handling: GPS and supply chain visibility, E-commerce distribution network design, last mile e-commerce delivery and route planning using GPS, GIS for facility location of e-commerce facility, Drone delivery model, predictive shipping.

Risk management in SCM:

Understanding Information security risks and cyber-attacks in e-commerce supply chain and mitigating the risks, supply and demand disruptions in e-commerce supply chain.

References

1. E-logistics and E-supply chain management applications for evolving business: By Derin Graham, Loaniss Manikkas, Dimitris Folinias- 2013.
2. E-commerce operations and supply chain management: By Sruthi S, Biswadip Basu Mallik, Dr. M. Jayalakshmi, M.Mahalingam
3. E-commerce platform acceptance: Suppliers, Retailers and Consumers: Editors:Ewelina lacka, Nik Yip, Hing-Kai-Chan.

Transportation and Shipping Logistics Management

Name of the Academic Program : UG
Title of the Course : Transportation and Shipping Logistics Management
L-T-P : T&P Credits: 03 Total Marks: 75 Hrs :45

Course Description:

Transportation and Shipping Logistics Management course deals with the study of production and distribution of materials or products from the consignor to consignee by different types of logistics, also deals with planning, implementing, and controlling the storage of goods and services, from point of origin to consumption. In Supply Chain Management, logistics helps the supplies reach the right place at the right time at the right price. It also provides basic accessible commodities that we order from grocery markets or other e-commerce platforms one click away. The course also imparts the tools and techniques used for improving the performance of the logistics management.

Learning Outcomes:

1. Understand and apply knowledge gained on global logistics management.
2. Understand the overall role of maritime logistics in International trade.
3. Analyse challenges in maritime logistics and transportation – coordination, safety, human.
4. Evaluate shipping economics for profitable operations.
5. Analyse and address logistic problems.

Unit-I:

Introduction to Logistics management, Modern Concepts in Logistics, Role of logistics in strategy, different types of logistics, Shipping Logistics, Maritime logistics as a trade facilitator, Global trade and maritime industry, Intermodal freight transport and logistics, Supply chain integration of shipping companies.

Unit-II:

Container – types, Different types of cargo, Container shipping, Tanker shipping, Dry and bulk shipping logistics, Hazards and Safety on Ships and Ports, Health issues and overall wellbeing, Skill requirement in shipping logistics, Environmental impact of shipping transportation.

Unit-III:

Ship finance and shipping economics, Financing ships with private funds and bank loans, Dry ports, Port centric logistics, Container hub ports, Principles of maritime economics, the economics of shipping.

References

1. Burns, M. G. (2018), Port management and operations, CRC press.
2. Lun, Y. V., Lai, K. H., & Cheng, T. E (2010), Shipping and logistics management. London: Springer.
3. Song, D. P. (2021), Container logistics and maritime transport, Routledge.
4. Tapaninen, U. (2020), Maritime Transport: Shipping Logistics and Operations, Kogan Page Publishers.
5. Song, D. W., & Panayides, P. (Eds.) (2015), Maritime logistics: A guide to contemporary shipping and port management, Kogan Page Publishers.
6. Martin Stopford (2009), Maritime Economics, Third edition, Routledge Taylor & Francis Group, London New york.