IQAC
Ensuring **Quality**

SRI SAIRAM ENGINEERING COLLEGE
ALUMNI | STUDENT | MANAGEMENT | FACULTY | INDUSTRY

Sri
SAI RAM
ENGINEERING COLLEGE
An Autonomous Institution
West Tambaram, Chennai - 44

SRI SAI RAM ENGINEERING COLLEGE
CHENNAI
TRUTH · LOVE · PEACE

Approved by AICTE, New Delhi
Affiliated to Anna University

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DIAMOND
CSI I-GAUGE
INDIA'S COLLEGE RATINGS

REGULATIONS 2024
Academic Year 2024-25 onwards

AUTONOMOUS
OPEN
ELECTIVES

VISION 2025

PEOPLE + PROCESS + PURPOSE = SUCCESS

At Sairam, we realize that the higher education sector is under significant pressure to adapt to the changing needs of the future. Institutions need to become more operationally efficient and effective, improve student outcomes, increase access to higher education, recruit and retain top faculty and researchers, and more.

Effective transformation in these areas requires an organization-wide strategic approach that seeks to improve and enhance organizational models, operating processes, technology, leadership, and talent models. We have adopted a 3Ps model of aligning People, Process and Purpose with the vision of the organization.

Inspiring **PEOPLE**

Improving **PROCESS**

Instilling **PURPOSE**

OPEN ELECTIVES

24MGOE901 - SDG NO. 4,9	FUNDAMENTALS OF SUPPLY CHAIN AND LOGISTICS MANAGEMENT	L	T	P	CP	C
		3	0	0	3	3

OBJECTIVES:

- Understand the core principles, evolution, and components of supply chain and logistics management and their interdependence.
- Analyze logistics cost structures, customer service elements, outsourcing practices, and strategic decisions in global logistics environments.
- Apply emerging technologies like AI, IoT, Blockchain, and Industry 4.0 concepts to improve supply chain integration, efficiency, and resilience.

MODULE - I   FOUNDATIONS AND EVOLUTION OF SCM AND LOGISTICS   7

History, Need, Role of Logistics in SCM, Principles, Technology and SCLM, Logistics optimization. Listing of Sub-sectors of Logistics.

MODULE - II   COST, PRODUCTIVITY, AND EFFICIENCY IMPROVEMENT   7

Production and Business Environment – Cost and Productivity, Cost Saving and Productivity improvement. Logistics Cost, reduction in logistics cost, benefits of efficient Logistics. Case Studies

MODULE - III   CUSTOMER SERVICE, PROCUREMENT, AND OUTSOURCING   8

Logistics and Customer Service – Definition, Elements – Phases, Customer Retention - Procurement and Outsourcing – Benefits, Methods, Critical Challenges - Case Studies

MODULE - IV   GLOBAL LOGISTICS STRATEGY AND INTEGRATION   8

Global Logistics and Supply Chain – Strategic Issues – Driving Forces – Warehouse Management, Modes of Transportation in Global Logistics and Barriers in Global Logistics – Logistics Markets and Competition - Integrated Logistics -Need for Activity Centers in Integrated Logistics. Role of 3PL and 4PL - Case Studies

MODULE - V   IT AND EMERGING TECHNOLOGIES IN SCM   8

Information Technology in Logistics and Supply Chain Management, Network Design and Planning in SCM, Block chain in Digital SCM, Smart Contracts, Cyber Security issues in Block chain for Supply Chain Integration with IoT & AI, Digital Twins on Supply Chain Process.

MODULE - VI   INDUSTRY 4.0, SMART OPERATIONS, AND DIGITAL SUPPLY CHAIN   7

Industry 4.0, Scope, Logistics and Supply Chain Digitization, Unifying Demand, Data Integration, Forecasting, Adaptability, Segmentation, Smart S & OP in Leading SCM MNCs.

TOTAL : 45 PERIODS

SKILL DEVELOPMENT ACTIVITIES

- Developing assessment skill in real world logistics challenges in SCM MNCs
- Improving 3PL, 4PL, and Smart S & OP skills in SCM real world scenario
- Apply IoT and Block Chain technology skills in the digital supply chain industry.
- Enhancing skills on smart warehouse layout with automation for digital SCM

TEXTBOOKS:

1. Chopra, S., and Meindl, P. (2021). Supply Chain Management: Strategy, Planning, and Operation (7th ed.). Pearson Education.
2. Ballou, R. H. (2007). Business Logistics/Supply Chain Management (5th ed.). Pearson Education.

REFERENCE BOOKS:

1. Christopher, M. (2016). Logistics and Supply Chain Management (5th ed.). Pearson UK.
2. Rushton, A., Croucher, P., and Baker, P. (2017). The Handbook of Logistics and Distribution Management (6th ed.). Kogan Page Publishers.
3. Stadtler, H., Kilger, C., and Meyr, H. (2015). Supply Chain Management and Advanced Planning (5th ed.). Springer.

WEB REFERENCES

1. https://ctl.mit.edu
2. https://www.scmglobe.com
3. https://www.logisticsmgmt.com
4. https://www.supplychaindigital.com
5. https://cscmp.org

MOOC COURSES

1. https://www.edx.org/course/logistics-and-supply-chains
2. https://www.coursera.org/learn/digital-transformation-supply-chain

3. https://www.edx.org/course/global-supply-chain-management
4. https://www.edx.org/course/industry-40-how-to-revolutionize-your-business
5. https://www.coursera.org/learn/blockchain-supply-chain

OUTCOMES:

Upon completion of the course, the student should be able to:

1. Describe the evolution and principles of logistics and supply chain management and identify sub-sectors within the logistics domain. (K2)
2. Analyze the cost structures and strategies for productivity enhancement and logistics cost reduction. (K4)
3. Evaluate the significance of customer service in logistics and the implications of outsourcing and procurement. (K5)
4. Examine strategic issues in global logistics, including warehouse operations, transportation modes, and integrated logistics frameworks. (K4)
5. Apply information technology, including blockchain, AI, IoT, and digital twins, to optimize supply chain processes. (K3)
6. Integrate Industry 4.0 concepts such as demand forecasting, segmentation, and smart S & OP to digitize and modernize supply chain operations. (K6)

CO - PO, PSO MAPPING

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	3	-	-	-	-	1	1	-	1	-	1
CO2	2	2	2	2	1	-	1	-	1	2	-
CO3	1	1	-	-	-	-	1	1	1	-	1
CO4	2	2	2	2	1	-	1	-	-	-	-
CO5	3	2	2	2	2	1	1	2	1	-	1
CO6	2	2	2	1	1	1	1	-	1	-	1

OPEN ELECTIVES

24MGOE902	WAREHOUSE MANAGEMENT	L	T	P	CP	C
SDG NO. 4,9,12	AND MATERIAL HANDLING	3	0	0	3	3

OBJECTIVES:

- Understand the role, functions, layout, and operational activities of a warehouse, including types and design principles.
- Analyze the latest technologies and trends in warehouse operations, such as automation, robotics, AS/RS, and WMS.
- Apply concepts related to packing, dispatching, logistics network design, and digital warehouse systems in real-life scenarios.

MODULE - I   INTRODUCTION, NEED, FUNCTIONS, AND WAREHOUSE DESIGN BASICS   7

Introduction to Warehouse – Need – Importance -Types - Broad functions, Layout – Design and Importance. Warehouse planning and design

MODULE - II   LAYOUT PRINCIPLES, STORAGE SYSTEMS, AUTOMATION, AND WMS   7

Warehouse layout and design principles, space utilization and storage systems, Automation and technology in warehouse design and operations, warehouse management systems, Recent trends in warehouse and distribution management. Case Studies

MODULE - III   CORE WAREHOUSE ACTIVITIES AND QUALITY PARAMETERS   8

Warehouse Activities - receiving, sorting, loading, unloading, Picking, Packing and dispatch, Quality parameters - Quality check- Need - Importance. Case Studies

MODULE - IV   PACKING, DISPATCHING, AND CROSS-DOCKING OPERATIONS   8

Procedure to develop Packing list and Dispatch note - Cross docking methods - Application & Coordinating - Importance of proper packing - Packing materials - Packing machines - Reading labels. Case Studies

MODULE - V   CAPACITY PLANNING, LOGISTICS NETWORK DESIGN, AND DIGITAL INTEGRATION   8

Warehouse Capacity, Infrastructure analysis and Location, Logistics network cost analysis, Owning vs Outsourcing, Service level optimization, and

Roadmap for logistics network design. Use of Robots in warehouses, Case picking and Handling System – Spillage, Breakage, etc., Digital systems in warehouses and material handling - Simulation models and Software. Case Studies

MODULE - VI   MATERIAL HANDLING TECHNOLOGIES AND
**   AUTOMATED STORAGE SOLUTIONS   7**

Material handling technologies, principles, Container - storage and retrieval equipment, AS/RS, material transport equipment, automatic data collection and communication equipment, Case Studies

TOTAL : 45 PERIODS

SKILL DEVELOPMENT ACTIVITIES
- Design a functional warehouse layout
- Gain practical exposure on packing, labeling, and generating dispatch notes.
- Develop demo versions skills on Warehouse Management Systems
- Case study experience on the use of robots or AS/RS in warehouses.

TEXTBOOKS:
1. Frazelle, E. (2001). World-Class Warehousing and Material Handling. McGraw-Hill.
2. Richards, G. (2021). Warehouse Management: A Complete Guide to Improving Efficiency and Minimizing Costs in the Modern Warehouse (3rd ed.). Kogan Page.

REFERENCE BOOKS:
1. Bartholdi, J. J., and Hackman, S. T. (2019). Warehouse and Distribution Science (Release 0.98). The Supply Chain and Logistics Institute.
2. Tompkins, J. A., White, J. A., Bozer, Y. A., and Tanchoco, J. M. A. (2010). Facilities Planning (4th ed.). Wiley.
3. Gwynne, R. (2020). The Logistics and Supply Chain Toolkit (2nd ed.). Kogan Page

WEB REFERENCES
1. https://www.werc.org
2. https://www.scmglobe.com
3. https://www.logisticsmgmt.com
4. https://www.supplychainbrain.com

MOOC COURSES
1. https://www.coursera.org/learn/supply-chain-logistics
2. https://www.udemy.com/course/warehouse-management-system-essentials/
3. https://alison.com/course/logistics-and-distribution-management-revised

OUTCOMES:
Upon completion of the course, the student should be able to:
1. Explain the types, need, and importance of warehouses in supply chain management. (K2)
2. Design effective warehouse layouts and apply space optimization techniques using modern principles. (K6)
3. Illustrate the warehouse activities and evaluate the role of quality checks in maintaining warehouse standards. (K5)
4. Prepare packing lists, dispatch notes, and understand the functioning and coordination of cross docking. (K3)
5. Analyze logistics network design, infrastructure, cost optimization, and compare in-house vs outsourced warehousing. (K4)
6. Apply warehouse automation, material handling equipment, AS/RS, and simulation tools for efficient warehouse planning. (K3)

CO - PO, PSO MAPPING

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	3	-	-	-	-	1	1	-	1	-	1
CO2	2	1	3	-	2	-	1	1	1	-	1
CO3	2	2	1	1	2	-	-	2	1	1	-
CO4	2	2	2	2	2	1	1	1	-	-	1
CO5	2	2	2	1	1	-	1	1	1	-	-
CO6	2	2	2	1	2	1	-	1	1	-	-

OPEN ELECTIVES

24MGOE903	**TRANSPORTATION MANAGEMENT**	L	T	P	CP	C
– **SDG NO. 4,9,12**		3	0	0	3	3

OBJECTIVES:

- Understand the fundamentals of transportation systems, strategies, and infrastructure for effective distribution management.
- Analyze the operational, economic, and regulatory aspects of multimodal, air, maritime, and containerized transportation systems.
- Apply advanced tools and technologies, including routing, scheduling, risk modeling, and sustainability principles in managing transportation networks.

MODULE-I   EVOLUTION, STRATEGY, AND FUNDAMENTALS OF TRANSPORTATION SYSTEMS   7

Transport fundamentals and Decisions - Strategy Considerations: The evolution of transportation and distribution; traffic management; transportation technologies.

MODULE-II   INFRASTRUCTURE, COST, FLEET, ROUTING, AND SCHEDULING OPTIMIZATION   7

Transportation infrastructure and performance analysis, Distribution cost analysis; fleet development and management, fleet performance indicators, routing and scheduling; shipment planning. Case Studies

MODULE - III   INTEGRATION OF MULTIPLE TRANSPORT MODES AND INTERMODAL OPERATIONS.   8

Multimodal and Intermodal transport - Infrastructure, Intermodal Transport Costs, Modes' role in intermodal transportation, Interface of Rail and Road Transportation, Intermodal movements between seaports and the inland - Issues and Processes. Case Studies

MODULE - IV   CONTAINER HANDLING SYSTEMS AND AGILE PORT OPERATIONS.   8

Container terminal handling in main ports, The Agile Port System, Containerization: Types, Advantages and Challenges, - Case Studies

MODULE-V   AIR CARGO MANAGEMENT, TRUCKING OPERATIONS, AND REGULATORY FRAMEWORK.   8

Air cargo services and benefits to stakeholders, Pricing, forecasting. Trucking, Load Optimization, Air Cargo Operations Management. Handling of Materials and Breakages, Safety Measures. Regulatory framework. Case Studies

MODULE-VI   MARITIME LOGISTICS, POLICIES, SUSTAINABILITY, AND INDUSTRY 4.0 APPLICATIONS   7

Maritime logistics in domestic and global trade – Importance, Structure, vessel types, shipping lines, policies, and regulatory mechanism, types of port terminal operations, and the role of Industry 4.0 technologies in maritime logistics, sustainability issues in maritime logistics.

TOTAL : 45 PERIODS

SKILL DEVELOPMENT ACTIVITIES

- Enhance MNC Logistics case based skills & knowledge (e.g., FedEx, Indian Railways, Maersk, Amazon etc).
- Design a model for a container terminal using layout planning and process flow tools.
- Skill development on handling challenges in container handling
- Develop skill on preparation and presentation of logistics report

TEXTBOOKS:

1. Coyle, J. J., Novack, R. A., Gibson, B., and Bardi, E. J. (2020). Transportation: A Supply Chain Perspective (9th ed.). Cengage Learning.
2. Rodrigue, J.-P. (2020). The Geography of Transport Systems (5th ed.). Routledge.

REFERENCE BOOKS:

1. Wood, D. F., Barone, A., Murphy, P. R., and Wardlow, D. L. (2017). International Logistics (3rd ed.). Cengage Learning.
2. Branch, A. E. (2007). Elements of Shipping (8th ed.). Routledge.
3. Waters, D. (2014). Global Logistics and Distribution Planning: Strategies for Management (5th ed.). Kogan Page.

WEB REFERENCES

1. https://transportgeography.org
2. https://www.imo.org
3. https://www.iata.org
4. https://www.freightwaves.com
5. https://www.ttnews.com

MOOC COURSES

1. https://www.coursera.org/learn/supply-chain-logistics
2. https://www.edx.org/course/maritime-supply-chain
3. https://alison.com/course/logistics-and-distribution-management-revised
4. https://www.udemy.com/course/anylogic-transport-simulation

OUTCOMES:

Upon completion of the course, the student should be able to:

1. Explain the evolution, types, and strategies of transportation systems and traffic management techniques. (K2)
2. Analyze cost structures, fleet performance indicators, and routing for distribution optimization. (K4)
3. Evaluate multimodal and intermodal systems, infrastructure, and integration between transportation modes. (K5)
4. Describe containerization methods, terminal operations, and the Agile Port System with related challenges. (K2)
5. Manage air cargo and trucking logistics, understand pricing, safety, forecasting, and regulatory compliance. (K3)
6. Examine the structure and importance of maritime logistics, and apply risk modeling, Industry 4.0, and sustainability principles in the maritime sector. (K4)

CO - PO, PSO MAPPING

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	2	2	2	1	-	-	-	1	1	1	-
CO2	2	2	3	2	2	1	1	1	1	2	-
CO3	2	2	2	3	1	1	1	-	1	1	1
CO4	2	1	1	2	2	1	1	-	1	-	-
CO5	2	1	-	1	2	1	-	-	1	-	-
CO6	2	2	1	-	2	-	-	1	-	-	1

OPEN ELECTIVES

24MGOE904	LOGISTICS INFORMATION SYSTEM	L	T	P	CP	C
– SDG NO. 4,12		3	0	0	3	3

OBJECTIVES:

- Understand the principles, architecture, and functional components of Logistics Information Systems (LIS) and their role in logistics management.
- Analyze the use of forecasting tools, ERP, CRM, and project management systems in integrated logistics and supply chain operations.
- Apply emerging technologies such as RFID, IoT, and mobile intelligence to optimize logistics operations and enhance decision-making.

MODULE - I   INTRODUCTION TO IT IN LOGISTICS, LIS PRINCIPLES, AND VIRTUALIZATION.   7

Introduction IT and management in Logistics and challenges-Strategic planning and models - LIS-Definition-Information functionality - Principles of designing or evaluating LIS applications., Virtualization and Virtual Machines.

MODULE - II   SYSTEM ARCHITECTURE, PLANNING AND OPERATING FLOWS   7

LIS Architecture: Components: Two forms of activities; Planning and co-ordination flows and operating flows - Flow and use of integrated logistics information. Case Studies

MODULE - III   FORECASTING METHODS, AND ERROR MANAGEMENT IN LOGISTICS INFORMATION.   8

Information forecasting: Definition-Process- components-characteristics. Information Approaches forecast techniques - Forecast error. Case Studies

MODULE - IV   ENTERPRISE-LEVEL SYSTEMS — ERP, SCM, AND CPFR INTEGRATION   8

Functional Area and 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). Case Studies

MODULE - V   CRM, PERFORMANCE ANALYTICS, AND FLEET MANAGEMENT INFORMATION SYSTEMS.   8

Customer Relationship Management (CRM). Performance Management: Data visualization, Mashups, and Mobile intelligence, Fleet Management Information System. Case Studies

MODULE - VI   IT-BASED PROCESS INTEGRATION   7

Business Process and Project Management: Architecture and IT design, System development, Software and Applications for management ERP Modules, Barcoding, RFID, Mobile Solution for Distribution, IoT in Logistics. Case Studies

TOTAL : 45 PERIODS

SKILL DEVELOPMENT ACTIVITIES

- Use Excel to simulate demand forecasting using moving average and exponential smoothing techniques.
- Design an LIS architecture diagram showcasing flows and integration points.
- Create logistics dashboards using Power BI or Tableau with KPIs like delivery performance and fleet utilization.
- Build a prototype using RFID/barcode scanning, or simulate IoT sensor applications in fleet/warehouse operations.

TEXTBOOKS:

1. Bowersox, D. J., Closs, D. J., and Cooper, M. B. (2019). Supply Chain Logistics Management (5th ed.). McGraw-Hill Education.
2. Ross, D. F. (2015). Introduction to Supply Chain Management Technologies (2nd ed.). CRC Press.

REFERENCE BOOKS:

1. Monk, E., and Wagner, B. (2012). Concepts in Enterprise Resource Planning (4th ed.). Cengage Learning.
2. Turban, E., Volonino, L., and Wood, G. (2018). Information Technology for Management (11th ed.). Wiley.
3. Hugos, M. H. (2018). Essentials of Supply Chain Management (4th ed.). Wiley.

WEB REFERENCES

1. https://www.ascm.org
2. https://www.scmglobe.com
3. https://searcherp.techtarget.com

4. https://sloanreview.mit.edu
5. https://www.rfidjournal.com

MOOC COURSES
1. https://www.coursera.org/learn/digital-supply-chain
2. https://open.sap.com
3. https://www.coursera.org/learn/forecasting-models
4. https://www.udemy.com/course/rfid-in-logistics-and-supply-chain/

OUTCOMES:
Upon completion of the course, the student should be able to:
1. Apply the fundamentals of LIS and IT's role in strategic logistics planning, virtualization, and architecture design. (K3)
2. Identify the architecture and flows of LIS and describe how planning and coordination are enabled by information integration. (K3)
3. Apply forecasting techniques and evaluate forecast accuracy using quantitative tools and methods. (K3)
4. Analyze enterprise-wide systems including ERP, SCM, and CPFR, and understand compliance and functional applications. (K4)
5. Design CRM and performance dashboards integrating mobile intelligence, data visualization, and fleet management. (K6)
6. Implement modern digital solutions like RFID, IoT, and mobile systems for process optimization and logistics system integration. (K3)

CO - PO, PSO MAPPING

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	3	-	-	-	-	1	-	-	-	-	-
CO2	-	3	-	-	-	1	-	-	2	-	-
CO3	3	-	-	-	-	-	1	1	-	-	-
CO4	-	3	-	-	-	2	1	1	1	2	1
CO5	-	-	3	-	-	1	1	1	1	-	1
CO6	-	2	-	-	-	1	1	1	1	1	1

OPEN ELECTIVES

24MGOE905	SUSTAINABLE LOGISTICS AND	L	T	P	CP	C
SDG NO. 4,9,12	GREEN SUPPLY CHAIN MANAGEMENT	3	0	0	3	3

OBJECTIVES:

- Understand the principles of sustainable development and the role of logistics and supply chain management (SCM) in achieving sustainability goals.
- Analyze the environmental, ethical, and social aspects of logistics, transportation, and infrastructure with a focus on innovation and green practices.
- Apply circular economy strategies, eco-friendly technologies, and collaborative models to design and manage sustainable logistics systems.

MODULE - I   FUNDAMENTALS OF SUSTAINABLE AND ETHICAL LOGISTICS   7

Introduction to Sustainable Development Goals and Logistics, Responsible SCM and Ethics – Role in Physical Distribution – Inbound and Outbound SCM, 7Rs of Logistics. Case Studies

MODULE - II   GREEN LOGISTICS POLICIES AND SOCIAL SUSTAINABILITY   7

Policies and Society's role for Sustainable Logistics, Social Sustainability – Sustainable Sourcing, Eco Friendly Packaging, Green Logistics, Logistics Emission – Emission Reduction Strategies, Collaborative Logistics – Case Studies.

MODULE - III   TECHNOLOGICAL INNOVATION AND GOVERNANCE FOR SUSTAINABLE LOGISTICS   7

Technology and Innovation in Logistics, Governance for Sustainability, Work Culture, Community Engagement. Case Studies.

MODULE - IV   SUSTAINABLE AND SMART TRANSPORTATION SYSTEMS   8

Sustainable Transportation – Need and Importance, Electrification of Fleets –Route Optimization. Case Studies

MODULE - V   SUSTAINABLE INFRASTRUCTURE AND SMART LOGISTICS SOLUTIONS   8

Sustainable Infrastructure for Logistics, Innovative and Green Solution, Smart Warehouses with automation and IoT technologies, Sustainable urban logistics hubs, Innovation in last mile delivery. Case Studies.

**MODULE - VI   CIRCULAR ECONOMY AND RENEWABLE ENERGY IN
                 LOGISTICS   7**

Circular Economy – Key Strategies: Reverse Logistics, Sustainable Packaging, Inventory Optimization. Renewable Energy to power warehouse fleets and equipments. Case Studies.

TOTAL : 45 PERIODS

SKILL DEVELOPMENT ACTIVITIES
- Conduct an audit of a company's logistics process and suggest sustainability improvements (e.g., packaging, transport).
- Analyze real-world green logistics case studies such as DHL GoGreen or IKEA's reverse logistics.
- Propose a model of an automated, IoT-integrated warehouse powered by renewable energy.
- Develop a carbon footprint reduction strategy for inbound/outbound logistics of an automobile and renewable energy based company.
- Design a logistics model based on reverse logistics and sustainable packaging for e-waste or returned goods.

TEXTBOOKS:
1. Rogers, D. S., and Tibben-Lembke, R. S. (2001). Going Backwards: Reverse Logistics Trends and Practices. Reverse Logistics Executive Council.
2. McKinnon, A., Browne, M., Piecyk, M., and Whiteing, A. (2015). Green Logistics: Improving the Environmental Sustainability of Logistics (3rd ed.). Kogan Page.

REFERENCE BOOKS:
1. Grant, D. B., Trautrims, A., and Wong, C. Y. (2017). Sustainable Logistics and Supply Chain Management (2nd ed.). Kogan Page.
2. Srivastava, S. K. (2007). Green Supply-Chain Management: A State-of-the-Art Literature Review. International Journal of Management Reviews, 9(1), 53–80.
3. Sarkis, J. (2012). Green Supply Chain Management: Product Life Cycle Approach. Springer.

WEB REFERENCES
1. https://sdgs.un.org/goals
2. https://www.weforum.org
3. https://www.greenbiz.com
4. https://www.smartfreightcentre.org
5. https://www.dhl.com/global-en/home/about-us/sustainability.html

MOOC COURSES

1. https://www.coursera.org/learn/sustainable-supply-chain
2. https://www.coursera.org/learn/circular-economy
3. https://www.udemy.com/course/green-logistics/
4. https://www.edx.org/course/sustainable-urban-freight-transport

OUTCOMES:

Upon completion of the course, the student should be able to:

1. Explain the significance of sustainable logistics and the application of SDGs in inbound and outbound logistics. (K2)
2. Analyze policies, social roles, and collaborative strategies for promoting eco-friendly packaging, green sourcing, and emission reduction. (K4)
3. Apply innovative technologies and governance models to foster sustainability and stakeholder engagement in logistics. (K3)
4. Evaluate sustainable transportation methods, including electric fleets and route optimization for reduced environmental impact. (K5)
5. Design sustainable infrastructure models such as smart warehouses and last-mile delivery hubs using IoT and automation. (K6)
6. Integrate circular economy principles through reverse logistics, renewable energy usage, and inventory optimization for sustainability. (K6)

CO - PO, PSO MAPPING

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	3	2	2	1	-	1	1	1	-	1	-
CO2	2	2	2	-	-	-	1	1	1	-	-
CO3	2	2	2	2	1	1	1	-	2	1	1
CO4	2	1	2	2	2	1	2	-	-	1	1
CO5	2	2	3	2	2	1	1	1	1	-	1
CO6	2	1	2	1	2	-	1	1	1	-	-

Imagine the Future and
Make it happen!

1 NO POVERTY	**2** ZERO HUNGER	**3** GOOD HEALTH AND WELL-BEING	**4** QUALITY EDUCATION	**5** GENDER EQUALITY	**6** CLEAN WATER AND SANITATION
7 AFFORDABLE AND CLEAN ENERGY	**8** DECENT WORK AND ECONOMIC GROWTH	**9** INDUSTRY, INNOVATION AND INFRASTRUCTURE	**10** REDUCED INEQUALITIES	**11** SUSTAINABLE CITIES AND COMMUNITIES	**12** RESPONSIBLE CONSUMPTION AND PRODUCTION
13 CLIMATE ACTION	**14** LIFE BELOW WATER	**15** LIFE ON LAND	**16** PEACE, JUSTICE AND STRONG INSTITUTIONS	**17** PARTNERSHIPS FOR THE GOALS	**Sairam** SDG ACTION PROGRAM

Together let's build a better world where there is NO POVERTY and ZERO HUNGER. We have GOOD HEALTH AND WELL BEING, QUALITY EDUCATION and full GENDER EQUALITY everywhere. There is CLEAN WATER AND SANITATION for everyone. AFFORDABLE AND CLEAN ENERGY which will help to create DECENT WORK AND ECONOMIC GROWTH. Our prosperity shall be fuelled by investments in INDUSTRY, INNOVATION AND INFRASTRUCTURE that will help us to REDUCE INEQUALITIES by all means. We will live in SUSTAINABLE CITIES AND COMMUNITIES. RESPONSIBLE CONSUMPTION AND PRODUCTION will help in healing our planet. CLIMATE ACTION will reduce global warming and we will have abundant, flourishing LIFE BELOW WATER, rich and diverse LIFE ON LAND. We will enjoy PEACE AND JUSTICE through STRONG INSTITUTIONS and will build long term PARTNERSHIPS FOR THE GOALS.

For the goals to be reached, everyone needs to do their part: governments, the private sector, civil society and **People like you.**

Together we can...

Sai Prakash Leo Muthu

Chairman & CEO – Sairam Institutions

MJF.LN. LEO MUTHU
Founder Chairman – Sairam Institutions