Supply Chain Management in Construction

Code	Credit Hours
CEM-813	3-0

Course Description:

This course introduces supply-chain management. The underlying objective is to introduce key supply-chain management concepts and examine relevant business practices. A detailed focus is on the application of these concepts in the construction industry. This course enables students to develop useful skills, in an increasingly global context, to analyze marketing, logistics, operations and channel-management issues.

Reference Books:

1. "Archie Higdon et al "Mechanics of Materials" by, 4th Edition, John Wiley & Sons Inc., 1985.
2. Arthur P Boresi "Advanced Mechanics of Materials", 6th Edition, John Wiley &Sons Inc., 2003

Prerequisites: Nill

ASSESSMENT SYSTEM FOR THEORY

Quizzes	10%
Assignments	10%
Mid Terms	25%
Term Project	10%
ESE	45%

Teaching Plan

Week No	Topics	Learning Outcomes
1	Overview of Logistic Systems and Supply Chain (SC)	Students will understand the key drivers of supply chain performance, such as facilities, inventory, transportation, information, sourcing, and pricing. They will analyze the trade-offs between responsiveness and efficiency, and how these drivers impact overall supply chain effectiveness. Students will learn about the strategic importance of facility location in supply chain management. They will explore the factors influencing location decisions and the methodologies used to determine optimal facility placement to balance cost, service levels, and operational efficiency. Students will understand the role of distribution and transportation in supply chains. They will examine different transportation modes and distribution strategies, focusing on optimizing routes, reducing costs, and improving delivery performance. Students will explore inventory management principles and practices. They will learn how to balance inventory levels to meet customer demand while minimizing costs, using techniques like safety stock calculations, EOQ models, and inventory turnover analysis. Students will understand the importance of accurate forecasting and sales planning in supply chain management. They will learn various forecasting methods and their application to predict demand, align production schedules, and manage inventory effectively.
2-6	Overview of Logistic Systems and Supply Chain (SC)	Students will study the integration of marketing, sourcing, and procurement functions within supply chains. They will explore the impact of technology on these activities, including the use of information systems to enhance procurement processes and supplier relationships. Students will develop practical skills by analyzing real-world supply chain case studies. They will use Excel to model and solve supply chain problems, enhancing their ability to apply theoretical knowledge to practical scenarios.
7-8	Operations Management	Students will learn how effective operations management can provide a competitive edge to organizations. They will examine key operational strategies and how they contribute to achieving cost leadership, differentiation, and responsiveness in the marketplace. Students will acquire analytical skills to identify and solve operational problems. They will learn to apply techniques such as process analysis, capacity planning, and quality management to enhance operational efficiency and effectiveness. Students will enhance their personal learning and group collaboration skills. They will critically analyze and evaluate various operations management techniques, considering the specific organizational context and its impact on operational decisions.

9	**MID-TERM EXAM**	
10-12	Decision Support Systems	Students will understand the principles of decision support systems, focusing on single-choice decisions and multiple-criteria decision analysis (MCDA). They will learn to apply MCDA techniques to evaluate alternatives and make informed decisions in complex scenarios. Students will understand the importance of strategic and tactical planning in supply chain management. They will learn to develop and implement supply chain plans that align with organizational goals, optimize resources, and meet customer demand efficiently.
13-17	Real Options for Product & System Design	Students will gain an understanding of system dynamics and its application in analyzing complex supply chain systems. They will learn to model dynamic interactions and feedback loops to predict system behavior and inform decision-making. Students will explore strategies for managing risks within supply chains. They will learn to identify, assess, and mitigate various risks, ensuring the stability and robustness of supply chain operations under uncertain conditions.
18	**End Semester Exams**	