

Course Code	Course Title	L	T	P	C
OLMBA613	Supply Chain Analytics	3	1	0	4
Pre-requisite	NIL	Syllabus version			
		1.0			
Course Objectives:					
1. To enrich the importance of the basics of Business Analytics and Optimization understand the importance of the basics of Supply Chain Analytics and Optimization. 2. To analyze the level of uncertainty associated with the supply of products and services to targeted customer segments and justify the choice of a supply chain strategy and its fit with competitive strategy. 3. To explain the role and applications of Descriptive, Predictive and Prescriptive Analytics in a Supply Chain.					
Course Outcomes:					
1. Basic insight in mathematical formulation of operations and supply chain management problems. 2. Understand the strengths and weaknesses of various modelling approaches. 3. Perform practical quantitative analysis related to operations and supply chain management. 4. Understand the relevance of quantitative analysis related to operations and supply chain management and the implication related to competence requirements in the companies.					
Module:1	Introduction to supply chain analytics				
Understanding functional activities or data set relevance to logistics and supply chain management- Strategies for data collection and aggregation-Approaches to analysis of functional data-Integrating results of functional analyses to better understand logistics and supply chain performance-Developing improvement strategies based on results of data analyses					
Module:2	Supply planning analytics - I				
Procurement and Strategic Sourcing - Inventory Modeling-aggregate planning and resource allocation decisions- Procurement Analytics- Production Modeling.					
Module:3	Supply planning analytics - II				
Prescriptive Analytics: Making the Best Decisions in Settings with Low Uncertainty- Decision Trees, Making the Best Decisions in Settings with High Uncertainty- Warehouse location and the GRG Multi-start and Evolutionary Solver engines-case studies					
Module:4	Demand Fulfillment analytics				
Demand Fulfillment- Price optimizing-optimizing inventory levels in distribution network - Transportation modeling- delayed differentiation, mass customization- Predictive Analytics: Risk and Evaluation of Alternatives - Using Solver to solve transportation or distribution problems-Demand Uncertainty, Forecasting, and the Newsvendor Problem-case studies					
Module:5	Supply Chain Network Design analytics				
Value of Supply Chain Network Modeling- Intuition Building with Center of Gravity Models- Locating Facilities Using a Distance-Based Approach- Alternative Service Levels and Sensitivity Analysis- Adding Capacity to the Model- Adding Outbound Transportation to the Model- Introducing Facility Fixed and Variable Costs- Baseline and Optimal Baselines- Three Echelon Supply Chain Modeling- Adding Multiple					

Products and Multi-Site Production Sourcing- Multi- Objective Optimization- The Art of Modeling- Data Aggregation in Network Design.			
Module:6 Integrated supply chain analytics			
Advanced and business supply chain related topics like CPFR, DDSN, Make/Buy - Total Supply Chain Cost- computation of transfer prices -revenue management- yield management - product changes/economies of scale- Recommendation production and prioritization case studies			
Module: 7 Advanced Analytics in supply chain			
Big data analytics, Machine Learning, Sustainability analytics including life cycle assessment (LCA), Analytic Hierarchy Process, Data Envelopment Analysis(DEA), Multi criteria decisions making(MCDM) Fuzzy Logic and Techniques-Application in SCM.			
Total Lecture hours			120 hours
Text Book(s)			
1.	Raman A, Fisher M, How Analytics Are Transforming the Supply Chain and Improving Performance, HBS Press, 2010.		
2.	Watson M, Supply Chain Network Design: Applying Optimization and Analytics to the Global Supply Chain, Pearson Education, 2014.		
3.	Joel D Wisner, G. Keong Leong, Keah-Choon Tan, Supply Chain Management A Balanced Approach , 3 rd edition Cengage Learning, 2012.		
Reference Books			
1.	Tayur S,Ganeshan R, Michael, (1999), M. Quantitative Models for Supply Chain Management. Kluwer Academic Publishers.		
2.	Winston, Wayne L, S. Christian Albright, (2001), Practical Management Science,3 rd edition, Pacific Grove, CA: Duxbury.		
3.	Feigin G, (2011), Supply Chain Planning and Analytics: The right product to the right place at the right time, Business Expert Press, New York, USA.		
4.	Fisher M, Raman A, (2010), The New Science of Retailing: How Analytics are Transforming the Supply Chain and Improving Performance, Harvard Business Press, Boston, Massachusetts, USA.		
5.	Handfield R, (2006), Supply Market Intelligence: A managerial handbook for building sourcing strategies, Taylor and Francis Group, Auerbach Publications, New York, USA.		
6.	Chopra S,Meindl P, (2016), Supply Chain Management: Strategy, Planning and Operation, 6 th edition, Pearson Education, USA.		
7.	Plenert, G. J, (2014), Supply Chain Optimization through Segmentation and Analytics, 1 st edition, CRC Press.		
Mode of Evaluation: Quiz/ Assignment/CAT/FAT			
Recommended by Board of Studies		02-11-2023	
Approved by Academic Council		No. 72	Date: 13-12-2023