Next-Gen Supply Chains: Harnessing IoT, Digital Twins, and AI-Driven Simulations

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Overview

This course delves into the transformative impact of cutting-edge technologies on supply chains, providing a comprehensive understanding of Digital Twin (DT), the Internet of Things (IoT), and simulation. Participants will learn how these tools enhance visibility, agility, and decision-making in modern supply chain operations. The course introduces Digital Twin technology for creating virtual replicas of supply chain processes, enabling real-time monitoring, simulation, and optimization. It also explores IoT-enabled devices and sensors that facilitate real-time data tracking, connectivity, and predictive maintenance. Additionally, students will gain hands-on experience with industry-standard simulation tools like AnyLogistix and Arena to model and optimize various supply chain scenarios.

Through case studies and practical applications across industries such as manufacturing, automotive, and food, the course demonstrates how these technologies create efficient, resilient, and sustainable supply chains. Designed for graduate students and professionals, this program equips participants with the knowledge and skills to drive digital transformation and address complex supply chain challenges.

Course participants will learn these topics through lectures and hands-on experiments. Also, case studies and assignments will be shared to stimulate research motivation of participants.

Modules	A: Module 1: Foundations of Supply Chain Digitalization
	24th Feb to 5th March 2025
	B: **Module 2: Advanced Tools and Applications for Smart Supply Chains**
	Number of participants for the course will be limited to fifty.
You Should Attend If…	▪ You are an industrial engineer, or a research scientist interested in designing advanced supply chain digitization systems and exploring their applications across various domains. ▪ You are a logistics Manager, E-commerce professional, or consultant, keen on developing mathematical models and solving complex problems using innovative approaches in your field. ▪ You are a student or faculty from an academic institution eager to learn how to conduct impactful research to enhance Logistics and Supply Chain systems, explore digital twin and IoT applications in logistics or work with cutting-edge technologies in supply chain management.
Fees	The participation fees including GST for taking the course is as follows: **Participants from abroad: US $250** **Industry/ Research Organizations: INR 4130** **Academic Institutions (PhD Scholar/Post Doc/Faculty): INR 3540** **Bachelor/Master Students: INR 1,180** The above fee includes all instructional materials, STC Kit, computer use for tutorials and assignments, laboratory equipment usage charges and 24 hr. free internet facility. The participants will be provided with accommodation on a payment basis. **Note:** There is no central registration on the GIAN portal (gian.iith.ac.in); registration will be managed directly by the hosting institute.

The faculty

Prof. Dnyaneshwar Mogale is an Associate Professor at Cardiff Business School, with a PhD in Industrial and Systems Engineering from IIT Kharagpur and a Post-Doctoral from Cranfield School of Management, UK. He is also an FHEA Fellow and a dedicated member of CILT's Logistics Research Network (LRN) forum. Dr Mogale's research interests include digital supply chain, risk management and sustainability. He employs advanced optimization and simulation methods to address complex real-world challenges within this domain. Notably, he has a strong track record of securing grants from diverse funding bodies, including Global Wales, ESRC IAA, and Innovate UK. He has worked with various industries including Yusen Logistics, Ocado, PharmDel, Moy Park and Tower Cold Chain Solutions. Dr Mogale has authored numerous research articles in prestigious international journals, including Transportation Research Part E, International Journal of Production Economics, International Journal of Production Research, Production Planning and Control, Annals of Operations Research, and Computers and Industrial Engineering. Additionally, he actively contributes as a reviewer for various leading international journals in the fields of Operations, Logistics, and Supply Chain Management.

Dr Saurabh Pratap is currently working as an Assistant Professor in the Department of Mechanical Engineering, Indian Institute of Technology (IIT BHU), Varanasi, U.P, India. Previously, He was working as Assistant Professor at Indian Institute of Information Technology, Jabalpur, M.P, India from June 2017 to Nov 2020 and Postdoctoral Fellow in the Department of Industrial & Manufacturing Systems Engineering at University of Hong Kong, Hong Kong from Oct 2016 to June 2017. He received his M. Tech degree in Production Engineering from National Institute of Technology, Durgapur (India) in the year 2011. He has completed his Ph.D. degree in Industrial & Systems Engineering Department at IIT Kharagpur, India in 2016. He has authored several technical papers. His publications appeared in such journals as International Journal of Production Economics, International Journal of Production Research, Computers & Industrial Engineering, Annals of Operation Research, Journal of Intelligent Manufacturing and Maritime Economics & logistics. He carried out collaborative research with the Cardiff Business School, Geneava Business School and the University of Hong Kong, HK. He is also serving as a Guest Editor of reputed journals, i.e. Computers & Industrial Engineering, Axioms, Operations Management Research Journal, Complexity journals, and Associate Editor of OPSEARCH, Operations Management Research Journal.

Course Co-ordinator

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Registration link:
https://forms.gle/5w65RD4qWLUb2YAT9