

GLOBAL ONLINE  
CERTIFICATION COURSE



# SUPPLY CHAIN OPERATIONS AND DISRUPTIONS MANAGEMENT: A WAY FORWARD

(29<sup>TH</sup> SEP - 27<sup>TH</sup> OCT 2021)

COURSE INSTRUCTORS



**PROF. TADEUSZ SAWIK**

Professor, Industrial Engg. & Operations Research  
*AGH University, Poland*  
*Reykjavik University, Iceland*



**PROF. MANOJ K. TIWARI**

Director  
*NITIE Mumbai*

COORDINATORS (NITIE)



Prof. Priyanka Verma



Prof. Ruchita Gupta



Prof. Sushmita Narayana



Prof. Debabrata Das

# ABOUT THE COURSE

- The COVID-19 pandemic has had several implications for businesses. However, few of them are as consequential as disruptions caused to global supply chains. Historically, supply chains have always been subject to disruptions caused by external factors and market variables, but the COVID-19 pandemic has come with extreme levels of difficulty. While the businesses slowly move towards normalcy, the pandemic will result in longer-lasting reconfigurations of supply chains to build resilience and manage disruptions.
- Being a leader in the field of supply chain and operations management, NITIE is proud to present the Global Online Certification Course on '**Supply Chain Operations and Disruptions Management: A Way Forward**' in association with **Prof. Tadeusz Sawik**.
- The course focuses on supply chain operations and disruptions management. It covers basic and advanced 'Supply chain scheduling' and 'supply chain disruptions management' concepts. The course also emphasizes upon mathematical modelling and optimization of business objectives using Mixed-Integer Programming (MIP) through **hands-on training on AMPL**. It includes real-life business cases with mathematical modelling and obtaining optimized solutions using MIP.
- Our goal for this course is to help you understand advanced supply chain management concepts, and better prepare you for uncertainties & disruptions. The mathematical approach of MIP, which is a pedestal of this course, can be used to achieve optimal or near-optimal solutions. The concepts of this course will aid you to tackle supply chain uncertainties while making better business decisions.
- As we enter the new era of supply chain, this course should provide you with a strong foundation of supply chain disruptions management, risk mitigation and optimization.

## COURSE STRUCTURE

- 29<sup>th</sup> Sep'21 – 27<sup>th</sup> Oct'21 (*No classes during the week of Dussehra Festival (11<sup>th</sup> -17<sup>th</sup> Oct'21)*)
- 6:00 PM – 9:00 PM IST || Mon, Wed, Fri
- 30 Hours Course || 10 Sessions (3 Hours/Session)
- Mode of Instruction - Live via Online Platform
- Upon completion of the course, all registered participants will receive a Certificate of Completion from NITIE signed jointly by Prof. Tadeusz Sawik and Prof. Manoj K. Tiwari
- Lecture Attendance & Course Participation will be the criteria for Course Completion

# FOCUS & OUTCOME



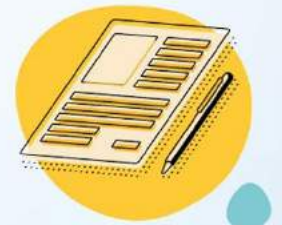
Supply chain scheduling, operations and disruptions management

Develop models and optimize business objectives using MIP (Mixed-Integer Programming)



Hands-on training on AMPL software and MIP modelling for creating mathematical models and identifying optimized solution of critical business problems

Learn advanced supply chain scheduling concepts with the help of industrial case studies



Build a resilient & robust supply chain by integrating multiple techniques

Learn advanced concepts of demand & supply portfolio selection to tackle supply chain uncertainties and disruptions



# COURSE CONTENT

## PART I: SUPPLY CHAIN OPERATIONS MANAGEMENT

### Lecture 1: 29 Sep, Wed

- Introduction to Supply Chain Scheduling
- Scheduling in Electronics Supply Chains

### Lecture 2: 01 Oct, Fri

- Scheduling of Flexible Flow Shops
- Scheduling of Surface Mount Technology Lines

### Lecture 3: 04 Oct, Mon

- Balancing and Scheduling of Flexible Assembly Lines: Integrated vs Hierarchical Approach
- Customer Order Acceptance and Due Date Setting

### Lecture 4: 06 Oct, Wed

- Aggregate Operations Scheduling
- Reactive Aggregate Operations Scheduling

### Lecture 5: 08 Oct, Fri

- Hierarchical Integration of Medium- and Short-Term Scheduling
- Coordinated Scheduling in Supply Chains with a Single Supplier: Integrated vs Hierarchical Approach

## PART II: SUPPLY CHAIN DISRUPTIONS MANAGEMENT

### Lecture 6: 18 Oct, Mon

- Introduction to a Multi-Portfolio Approach
- Selection of Supply Portfolio

### Lecture 7: 20 Oct, Wed

- Selection of Fair Supply Portfolio
- Selection of Robust Supply Portfolio

### Lecture 8: 22 Oct, Fri

- Selection of Resilient Supply Portfolio
- Selection of Primary and Recovery Supply Portfolio

### Lecture 9: 25 Oct, Mon

- Selection of Primary and Recovery Supply and Demand Portfolio
- Selection of Resilient Multi-Tier Supply Portfolio (i)

### Lecture 10: 27 Oct, Wed

- Selection of Resilient Multi-Tier Supply Portfolio (ii)
- Selection of Security Controls Portfolio

# PRE-REQUISITES

The course is open for all who are interested in supply chain operations and disruptions management.

Desirable Pre-requisites for the Course:

Basic knowledge of

- Supply chain and business operations
- Operational Research
- Statistics

► Current students (Bachelors/ Masters / PhD / FPM) would benefit if they have atleast completed an introductory course on Operations Management or Operations Research.

► Industry participants with domain knowledge in supply chains operations, planning and scheduling are also welcome to apply.



## ABOUT NITIE

- National Institute of Industrial Engineering (NITIE), established in 1963 by the Government of India with the assistance of United Nations Development Project (UNDP) through the International Labour Organization (ILO), is one of the leading institutes for management education.
- It has proven its excellence by continuously being featured in India's best B-schools list and was ranked 11<sup>th</sup> in the most recent Business Today Survey.
- NITIE, a pioneer in Industrial Management has been positioned 12<sup>th</sup> amongst management schools in India by National Institutional Ranking Framework (NIRF) in 2020.
- NITIE, widely known as the leading institute in the area of Supply chain and Operations, holds a purpose in advancing the transformative education and industry inspired research in different domains thus dedicating itself to help Indian businesses to make their presence felt globally.
- It has a strong linkage with private and public sectors, national research institutes, other academic institutions, universities, government organizations, and communities.
- The institute has decided to act as a driving force not only in the manufacturing sector but all dynamic sectors of the Indian economy.
- It has aligned its vision and activities in line with the current and future needs of the Indian industries making them vibrant and influential globally.

# COURSE INSTRUCTORS



## PROF. TADEUSZ SAWIK

Professor, Industrial Engg & Operations Research  
*AGH University, Poland*  
*Reykjavik University, Iceland*

- Founding Chair, Dept. of Operations Research & Information Technology for 11 years.
- He has published numerous books (including Production Planning and Scheduling in Flexible Assembly Systems, Springer, 1998; Scheduling in Supply Chains Using Mixed Integer Programming, Wiley, 2011; and Supply Chain Disruption Management Using Stochastic Mixed Integer Programming, Springer 1<sup>st</sup> edition 2018, 2<sup>nd</sup> edition 2020), and more than 150 individual articles in many prestigious journals.
- He is the founding Editor-in-Chief of Decision Making in Manufacturing and Services Journal (AGH University Press).
- He is the recipient of many individual awards for research achievements, including five times of "Scientific Excellence Award" from the Minister of Science and Higher Education.
- In the 50<sup>th</sup> and 55<sup>th</sup> volumes anniversary issue of International Journal of Production Research (IJPR), a flagship journal in Production Research, Prof. Sawik has been recognized as one of the leading scholars in Production Research and one of the top authors who have had the greatest impact on defining the knowledge represented in IJPR.
- He has been ranked #167 in Operations Research until the end of 2019, #91 in Operations Research and #87 in Engineering during the single calendar year 2019 in the World's Top 2% Scientists list released by Stanford University.
- He has been consultant to industry and several research and development centers, including Motorola Advanced Technology Center, a Corporate Lab of Motorola in Schaumburg, IL, from 1999 to 2005.
- His current research interests include logistics and supply chain management, operations management, supply chain risk management, homeland and cyber security, scheduling, stochastic optimization and integer programming.
- AGH profile- <http://home.agh.edu.pl/~tsawik/CV.pdf>  
LinkedIn profile- <https://www.linkedin.com/in/tadeuszsawik17>

# COURSE INSTRUCTORS



## PROF. MANOJ K. TIWARI

Director  
*NITIE Mumbai*

- Prof. Manoj K. Tiwari, Director-NITIE, is on-lien from his post as Professor, Department of Industrial and Systems Engineering at Indian Institute of Technology, Kharagpur.
- He has been ranked #1 among top 100 individual researchers across the world who had published research articles in International Journal of Production Research (1985-2010), the top leading author for Supply Chain Analytical Techniques (Computer & Industrial Engineering), among Top 20 most productive authors in the area of Production and Operations Management in the last 50 years (International Journal of Production Economics, 2009) and rated 2<sup>nd</sup> among many researchers working in Logistics and Supply Chain Management in India (Analysis of the logistics Research in India-White paper published in TU Dortmund University, Dortmund Germany-2012).
- He is the recipient of “Most Influential Researcher Award” in the domain of Operations and Supply Chain Management.
- Optimization, Simulation and Computational Intelligence are the main techniques adopted by Prof. Tiwari to automate the decision support system for complex and large-scale problems in Manufacturing and Logistics System.
- Profile on NITIE Website - <https://www.nitie.ac.in/about-director>
- LinkedIn Profile - <https://www.linkedin.com/in/manoj-tiwari-5050a634/>

# COURSE FEES

## For Individual Registrations

Category	Fee Category	Fee Rate (Incl. of all)*
Participants from India	Student	INR 3,000/- per participant
	Academician / Faculty	INR 6,000/- per participant
	NITIE Alumni	INR 6,000/- per participant
	Industry Professionals / Others	INR 9,000/- per participant
Foreign Participants	Any	USD 125 per participant

\*Convenience charges may apply

## For Bulk Registrations

Students		Industry Professionals	
Number of Participants	Fee Rate (Incl. of all)*	Number of Participants	Fee Rate (Incl. of all)*
5 to 10	INR 2,700/- per participant	11 to 20	INR 8,700/- per participant
11 and above	INR 2,500/- per participant	21 and above	INR 7,500/- per participant

Please write a mail to [scmdisruption@nitie.ac.in](mailto:scmdisruption@nitie.ac.in) for bulk registrations.








# COORDINATING TEAM

Click [Here](#) for FAQs

For all queries, please email to [scmdisruption@nitie.ac.in](mailto:scmdisruption@nitie.ac.in)

## STUDENT COORDINATORS

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## FACULTY COORDINATORS

Prof. Priyanka Verma  
Prof. Ruchita Gupta  
Prof. Sushmita Narayana  
Prof. Debabrata Das

## POSTAL ADDRESS

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