



# MANAGEMENT OF INVENTORY SYSTEMS

**PROF. PRADIP KUMAR RAY**

Department of Industrial and Systems Engineering  
IIT Kharagpur

**TYPE OF COURSE** : Rerun | Elective | UG/PG

**COURSE DURATION** : 12 weeks (24 Jan' 22 - 15 Apr' 22)

**EXAM DATE** : 24 Apr 2022

**INTENDED AUDIENCE** : Management, Industrial Engineering, Mechanical Engineering, Production Engineering and related disciplines.

**INDUSTRIES APPLICABLE TO** : Tata Steel, Tata Motors, L&T, Linde and similar such manufacturing and service organizations including IT companies

**COURSE OUTLINE :**

The objective of the course is to introduce the basic concepts and statistical and other quantitative techniques and methods employed in the broad area of materials management, in general and inventory control and management, in particular. Static and dynamic inventory problems under certainty, risk and uncertainty, design of inventory study and decision procedures, current approaches in inventory management, important methods and approaches in purchasing, storing, distribution, value engineering/analysis, logistics and SCM are some of the topics which are required to be covered for the students taking up this course for the first time.

**ABOUT INSTRUCTOR :**

Prof Pradip Kumar Ray is a Professor in the Department of Industrial and Systems Engineering, Indian Institute of Technology (IIT), Kharagpur, India. A mechanical engineering graduate (IEST, Shibpur) with MTech degree and PhD in industrial engineering (IIT Kharagpur), he has more than thirty-six years of experience - eight years in industry and twenty-eight years of teaching and research experience at IIT Kharagpur. He has published one text book, three edited books, thirteen book chapters, six lecture packages, and 162 papers in international and national journals of repute and conferences His areas of interest include productivity modelling, materials management, quality engineering, ergonomics, healthcare inventory management. He has secured substantial number (27 till date) of industry and research grants. He has supervised 17 PhD scholars. He is a certified Lead Assessor for ISO-9001 registration, and a member of INFORMS and IIMM, and a Fellow of WAPS and IE (India).

**COURSE PLAN :**

**Week 1:** Introduction to Inventory and Materials Management

**Week 2:** Inventory Problems and Selective Inventory Management

**Week 3:** Static Inventory Problems under Risk

**Week 4:** Static Inventory Problems under Uncertainty

**Week 5:** Dynamic Inventory Problems under Certainty

**Week 6:** Dynamic Inventory Problems under Risk

**Week 7:** MRP, MRP-II and DRP

**Week 8:** JIT-based Approaches for Materials Management

**Week 9:** Basics of Purchasing Management

**Week 10:** Theory of Constraints and Materials Management

**Week 11:** Value Engineering/Analysis and Stores Management

**Week 12:** Logistics and Supply Chain Management