



MANAGEMENT

Decision modeling

Type of Course	: New
Course Snapshot	: Elective / All degrees : Applies to all
Pre-requisites	: Basic Probability and Statistics : Basic Operations Research
Course Duration	: 20 hours / 8 weeks
Industry Support	: Manufacturing Industry; : Service Industry; Chemical Industry;

COURSE OUTLINE:

Decision Modeling is an important component of Operations Research. With the advent of globalization, only those industries survive who would be able to make effective decisions. Out of the vast coverage of decision models, this course focuses on decision analysis, waiting line or queuing models, simulation models, and network models. This course will be of immense value not only for the people working in manufacturing or service industry but also to undergraduate and postgraduate students of all fields of engineering and management.

INSTRUCTOR:

Prof. Biswajit Mahanty
Department of Industrial and Systems Engineering
IIT Kharagpur



ABOUT INSTRUCTOR:

Prof. Mahanty has had a rich and varied professional career with six years in industry and more than 26 years in teaching, research, and industrial consulting. His areas of interest are in Operations Research, Systems, Project Management, and Information Systems. He is also an author of the book 'Responsive Supply Chain' published by the prestigious CRC press.

COURSE PLAN:

- Week 1 : Decision Analysis: Introduction to Decision modeling, Probability Concepts, Decision modeling for deterministic, uncertainty, and risk situations.
- Week 2 : Decision Analysis: Bayes Theorem, Decision Making with and without Experimentation, Decision Trees
- Week 3 : Waiting Line Models: Elements of Queuing models, Queuing models based on the birth-and-death process
- Week 4 : Waiting Line Models: Priority-Discipline Queuing Models, Finite population models, Queuing cost models
- Week 5 : Simulation: Discrete-Event Simulation modelling, Random numbers and Random Variates, Input Modelling and Output analysis
- Week 6 : Simulation: Continuous Simulation, System Dynamics
- Week 7 : Network Models: Introduction to Graph theory, Tree and Spanning Tree, Maximal Flow algorithms
- Week 8 : Network Models: Maximal Flow algorithms (continued), Shortest Path algorithms