Indian Institute of Technology Kanpur

Course Proposal
Indian Technical and Economic Cooperation Programme

Title of the Course/Workshop: **Data Science for Managerial Decision-Making**

Item	Details
Title of the Course	Data Science for Managerial Decision-Making
Course Coordinators	• Dr. Faiz Hamid, Department of Industrial & Management Engineering (Correspondence: fhamid@iitk.ac.in) • Dr. Deep Mukherjee, Department of Economic Sciences
Duration	ONE week
Eligibility Criteria (basic expected background)	Bachelor's degree in Engineering, Science, Economics with exposure to Mathematics and Statistics
Target group	Teachers of Economics/Engineering/Management disciplines, Research scholars, Business analysts from corporate sector
Tentative dates for the proposed event	September 19–25, 2022
Objectives	The course will comprise of essential aspects of data science methods for managerial/business decision making. Participants will be exposed to Statistical and Operations Research based tools. Each module will be integrated with hands-on experiments to educate the participants to real-world applications and research. The course would be designed for teachers, researchers, and industry personnel who would like to upgrade their analytical toolset for enhanced data analysis.
Tentative list of topics to be covered	1. Mathematical Programming: Linear, Integer, Multi-objective 2. Network Optimization 3. Transportation and Telecommunication Models 4. Machine Learning Techniques: Supervised, Unsupervised 5. Decision Analysis under Uncertainty 6. Linear Regression: Estimation, Hypothesis testing 7. Discrete Choice Models: Logit, Probit 8. Time Series Analysis: Classical, Box-Jenkins approach 9. Efficiency Analysis: Stochastic Frontier Analysis, Data Envelopment Analysis 10. Laboratory sessions using Excel, Python, and Stata