Indian Institute of Technology Kanpur

Course Proposal

Indian Technical and Economic Cooperation Programme

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

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| **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
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| *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 upgradetheir 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
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