

INDUSTRIAL AND MANAGEMENT ENGINEERING, IIT KANPUR

IME 605: OPERATIONS RESEARCH FOR MANAGEMENT (3-0-0-0-9)

Sep 08, 2017

Course objectives:

This course is concerned with quantitative modeling of real world decision making problems using Operations Research techniques. It will present techniques for optimization and the theory behind them, but will also show how to use these techniques on real problems. There is significant emphasis to interpret the numerical results obtained from these algorithms

Course contents:

- Introduction, mathematical modeling and optimization in management, single and multi-variable optimization
- Linear programming - formulation, solution procedures, duality and sensitivity analysis
- Transportation and Assignment problems
- Network models – Max-flow, min-cost flow, and shortest path problems
- Introduction to integer programming, formulation, branch-and-bound method
- Introductions to dynamic, and non-linear programming problems
- Multi-objective optimization
- Decision making under uncertainty
- Introduction to game theory

Instructor: Dr. Faiz Hamid (fhamid@iitk.ac.in)

Class Room: C3, IME Building

Time: M, Th (09:00 - 10:15)

Course Organization: All Notices for the course will be sent by email to the course email list.

Home Assignments:

At the end of every chapter or week, home assignments will be given. The students are strongly advised to solve and master the material of the home assignment, submission is optional.

Exams and Quizzes:

- One mid-semester examination of two hours (weight: 40%)
- One end-semester examination of three hours (weight: 40%)
- Two quizzes (weight: 20%)

Attendance:

It goes without saying that 100% attendance is compulsory. Any student who is granted leave by the Convener, DPGC/DUGC also must inform the instructor regarding his/her absence.

Recommended Books:

This being a PG course there is no prescribed text. However, the following books are recommended:

- W.L. Whinston. Operations Research: Applications and Algorithms, Cengage Learning
- F.S. Hillier, G.J. Lieberman. Introduction to Operations Research, McGraw Hill
- H.A. Taha. Operations Research: An Introduction, Pearson
- R.K. Ahuja, T.L. Magnanti, J.B. Orlin. Network Flows, Pearson
- R.K. Sundaram. A First Course in Optimization Theory, Cambridge
- L.A. Wolsey. Integer Programming, Wiley
- R. Bellman. Dynamic Programming, Dover

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