PhD Course

Equitable Resource Allocation: Models, Algorithms, and Applications

Block course:

Wednesday, May 4	room no. 1083b
Tuesday, May 10	room no. 2053
Wednesday, May 11	room no. 0080
Thursday, May 12	room no. 2053
Tuesday, May 17	room no. 2053
Wednesday, May 18	room no. 2053
Tuesday, May 24	room no. 2053
Wednesday, May 25	room no. 0080
Thursday, May 26	room no. 2053

Time: 02:00-05:00 p.m.

Course Instructor: Professor Hanan Luss, Dept. of Industrial Engineering and Operations Research, Columbia University

Course Value: 2 SWS or 4 LP

Course Overview:

This course examines diverse resource allocation problems, where a limited amount of resources are allocated among competing activities. We focus on models with significant special mathematical structures, where the corresponding formulations can be exploited and solved by elegant, computationally efficient algorithms. Most of the course will emphasize diverse equitable resource allocation models, where numerous resources are allocated fairly among competing activities. We will explore the use of these models and algorithms in the context of various application areas, including logistics, communication networks, facility location, and homeland security.

Textbook: H. Luss, Equitable Resource Allocation: Models, Algorithms, and Applications, Wiley, 2012.

Course Contents: This course includes 9 classes, each of 3 academic class hours:
Class 1: Introduction and Perspective.
Class 2: Nonlinear Resource Allocation.

Class 3: Equitable Resource Allocation: Lexicographic Minimax and Maximin Optimization.
Class 4: Equitable Resource Allocation with Substitutable resources.
Class 5: Equitable Multi-Period Resource Allocation.
Class 6: Equitable Allocation of Network Resources.
Class 7: Equitable Resource Allocation with Integer Decisions: Special Cases.
Class 8: Application issues (student presentations).
Class 9: Equitable Resource Allocation with Integer Decisions: General Cases,
 and final summary of course.

Student evaluation: class participation and student presentation

How to register: Please e-mail Julia Bachale: iwi@uni-hamburg.de until April 30, 2016