IE 546
Competitive Models in Supply Chain Management
Spring 2018

IE 546 Competitive Models in Supply Chain Management: Centralized and decentralized analysis of production and distribution systems; existence and uniqueness of equilibrium in principal agent and simultaneous move games; contract design; information asymmetry, Bayesian games; cooperative games; dynamic games. (3 credits, 7 ECTS)

This course is offered to graduate and senior undergraduate students. Recent interest in supply chain management (SCM) raised interesting new problems for IE/OR. Analysis of problems with inventory, service and price competition introduces new challenges. The objective is to explore state of the art research in decentralized analysis of supply chain management problems.

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Teaching Assistant: TBA

Course schedule: *TThTh 712   TBA*

Course Web Page: http://moodle.boun.edu.tr/

Prerequisite: Knowledge of multivariate calculus, basic optimization and probability theory.

Course outline:

Topic	*Week*
Introduction	1
Supplier-buyer competition (quantity)	2
Supplier-Buyer competition (price)	3-4
Game theoretic concepts in SCM	5-6
Retailers' competition on quantity	6
Retailers' competition on price	7
Asymmetric Information	8-9
Models with pre-commitment	10-11
Models with random yield and random demand	12
Stochastic games under substitutable demand	13
Cooperative models	14

Grading: Class participation, 3 assignments (30%), a term project (30%) and a final examination (40%) will make up your total grade.

Textbook: There is no textbook for this course. Material will be distributed during the course over the web. A good review is:
Cachon, G. "Supply Chain Coordination with Contracts", in Graves, S. and de Kok, T. (Eds.) *Handbooks in Operations Research and Management Science: Supply Chain Management*, North-Holland, 2003 (available at the course web site).