

DSEF ?..? PhD Course: Game Theory in Supply Chain Management

1. Course details

Semester:	1
Credit rating:	2 ECTS
Teaching units	15
Pre-requisite(s):	No background beyond first year graduate microeconomics is required, although familiarity with contract theory and information economics is useful.
Lecturers:	Benny Mantin, LCL
Administrator:	Roswitha Glorieux
Tutors:	None
Seminar times and rooms:	please see Point 3
Tutorial times and rooms:	None
Communications	It is important that students should regularly read their University e-mails, as important information will normally be communicated this way.
Mode of assessment:	Attendance/Term paper
Examination Periods:	TBA
Course WebPage:	Moodle.uni.lu

2. Aims and objectives

Aims

This course will cover advanced game theory concepts and their applications within supply chains. Classic operations management literature has evolved considerably in recent decades and, among others, seeks to capture the challenging interactions between various agents along supply chains. The course will start with a brief introduction into some of the fundamental game theoretical concepts necessary for the applications in supply chains, will provide extensive understanding of the classic supplier-retailer coordination problem, will elaborate on the newsvendor setting to yield deep insights into coordination mechanisms. Lastly, if time allows, we will integrate the role of strategic consumers and study the effect of their presence on pricing and inventory decisions.

3. Plan of semester

Dates 2018	Room	Time	Lecture	Topic
XXX	TBA	9:00 – 13:30		Please see point 4
XXX	TBA	9:00 – 13:30		

Maybe split the class over 3-4 sessions?

4. Course details (by topics)

Below the main topic are outlined along with some key references.

- 1 *Brief introduction to game theory*
- 2 *Supply Chain coordination: double marginalization and some remedies*
 - Jeuland, A. P., & Shugan, S. M. (1983). Managing channel profits. *Marketing science*, 2(3), 239-272. or
 - Jeuland, A., & Shugan, S. M. (2008). Managing channel profits. *Marketing Science*, 27(1), 52-69.
- 3 *Cooperative games*
- 4 *Inventory models: the newsvendor and related contracts*
 - Cachon, G. P. (2003). Supply chain coordination with contracts. *Handbooks in operations research and management science*, 11, 227-339.
 - Lariviere, M. A. (1999). Supply chain contracting and coordination with stochastic demand. In *Quantitative models for supply chain management* (pp. 233-268). Springer US.
- 5 *Strategic consumers*
 - Aviv, Y., & Pazgal, A. (2008). Optimal pricing of seasonal products in the presence of forward-looking consumers. *Manufacturing & Service Operations Management*, 10(3), 339-359.
 - Zhang, Y., Mantin, B., & Wu, Y. (2018). Inventory Decisions in the Presence of Strategic Customers: The Generalized Pull-to-Center Effect.

5. Further information about assessment

Examination(s)

Weighting: 100%

Date: TBA

Length: Report/Term Paper

Structure: A short paper (5 pages) with reflections on possible applications of the framework developed in class.