

**Course Outline 2017**  
**OPSMGT 766: FUNDAMENTALS OF SUPPLY CHAIN COORDINATION**  
**(15 POINTS)**

**Semester 2 (1175)**

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**Course Prescription**

Focuses on the issues fundamental to supply chain coordination. Impact of information asymmetry, limits of information sharing, incomplete contracts, strategic customers and other selected topics typically covered in separate subjects such as Contract Theory, Industrial Organization and Implementation Theory are studied in the supply chain management context. The course is taught from the quantitative perspective.

**Programme and Course Advice**

Prerequisite: none

If you are not familiar with Game Theory, please access the relevant materials on Canvas before the first lecture.

**Goals of the Course**

The course equips students with skills necessary to identify situations when a supply chain may fail and to come up with appropriate actions to ensure supply chain coordination. Students will learn tools to analyse incentive conflicts between firms in a supply chain.

By the end of this course it is expected that a student will:

- understand the major factors affecting performance of a supply chain;
- have knowledge and skills to read and understand contemporary research papers using analytical models for studying supply chains in order to conduct research, deal with real life problems, and build expertise on their own;
- have an advanced understanding of the factors affecting supply chain performance such as private information, hidden action, competitiveness and commitment;
- be able to analyse real-life problems and identify which of the major factors known to hinder performance a supply chain are the most relevant in a particular situation;
- be able to model and analyse typical problems in supply chain management and demonstrate the interplay of the major factors relevant in the problem;
- be able to propose specific mechanisms allowing for the factors specific to a given real-life situation.

**Learning Outcomes**

By the end of this course it is expected that a student will be able to:

1. identify practical situations when supply chain coordination is required;
2. analyse models proposed in the literature for studying different aspects of supply chain coordination;
3. explain limitations of the models proposed in the literature;
4. identify factors relevant for some of the typical problems in supply chain coordination and develop stylized models to understand their interplay; and
5. propose specific mechanisms coordinating supply chain in a particular situation.

## Content Outline

- ❑ Week 1. Introduction to supply chain management. Common causes of failure in supply chain.
- ❑ Week 2. Non-cooperative game theory: basic concepts and examples. Different types of competition. Sequential games. Application to supply chain coordination.
- ❑ Week 3. Basic principles of coordination. Newsvendor model: ways to mitigate double marginalisation.
- ❑ Week 4. Cooperative game theory: basic concepts and examples.
- ❑ Week 5. Developing a menu of contracts. Revelation principle.
- ❑ Week 6. Wrap-up and mid-term test.
- ❑ Week 7. Unknown quality of supplier products: how to select the right supplier.
- ❑ Week 8. Suppliers help to develop a new product: coordinating their efforts.
- ❑ Week 9. Supplier collusion at an auction. Bargaining theory: who gets a larger share?
- ❑ Week 10. Biform games: first compete, then cooperate.
- ❑ Week 11. Renegotiation in supply chain: potential risks.

Note that topics covered in weeks 8-11 are based on recent research papers and their choice is subject to changes based on the students' background and research interests.

The more detail information regarding the course material and its sequencing will be available on Canvas. Due to different factors, the schedule is subject to changes. However, every effort will be made to minimise their number.

## Learning and Teaching

This course is taught on the city campus and the anticipated class size is about 15 students. A variety of teaching approaches will be utilized including lectures, class discussions, assignments and exams. The class typically meets for three hours a week. Students are expected to spend at least six additional hours each week for reading and preparing for the class. Preparation for active participation in the discussions of the assigned articles is critical for mastering the course material.

## Teaching Staff

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## Learning Resources

Students are required to complete the prescribed readings prior to each class session and be fully prepared to contribute to an in-depth discussion.

The primary sources of the readings are books and articles (available from the university library and/or online). The list of readings will be provided on Canvas.

## Assessment

Six individual HW assignments (5% each)	30%	
Mid-semester test (1.5 hours, open-book)	20%	
Final exam (3 hours, open-book)	<u>50%</u>	Covers the entire course
Total	100%	

Learning Outcome	HW Assignments	Mid-semester test	Final Exam
1		X	X
2	X		
3	X		
4	X	X	X
5	X	X	X

There is no minimum mark required to get on the final exam in order to pass the course

## Inclusive Learning

Students are urged to discuss privately any impairment-related requirements face-to-face and/or in written form with the course coordinator, tutor and/or lecturer.

## Student Feedback

In the spirit of continuous improvement, feedback and ideas on this course are welcomed. Past student feedback resulted in a more practical orientation of this course and content restructuring.