KEDGE
BUSINESS SCHOOL

CREATED BY **BEM** & **EUROMED MANAGEMENT**

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SUPPLY CHAIN SIMULATION
Semester 3, *2020 – 2021*

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OFFICE HOURS	by appointment only

COURSE DELIVERABLE	DUE DATE	WEIGHT ON FINAL GRADE
Group assessment	During the course	40%
Final exam (Individual assessment)	On session 10	60%

Kedge Business School and its professors, encourage you to use your Pro-Acts, company projects and internships as privileged opportunities to apply the reflexions, theories, concepts and tools presented during this course

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INTRODUCTION AND OBJECTIVES

Course Purpose & Objectives

The course **Supply Chain Simulation** provides a three business games (simulations) that allows the exploration and the exploitation of basic supply chain management practices. The simulation offers a set of rounds that show the impact of inter-functional decisions on the global performance of the supply chain. It also allows the validation of the inherent role of information sharing and the understanding of the notion of communication. Finally, it has the objective to confront the students to the principle of global vision in the supply chain.

The game **ILOG** provides a simulation of an enterprise. The students compete on five different markets with the same product. They have to produce and distribute gadgies. To meet this goal, they take decisions on raw material requirements, final product distribution planning, storage requirements, and distribution requirements (needs and mean of transportation). The simulation offers an overview of the complexity of supply, transportation, and planning management.

The collaboration game is an excel-based game in which students need to take store replenishment decisions and subsequent distribution and production decisions. The groups of students face a closed from real life environment and try to take the best decisions, in competition with other groups. The core of the collaboration game is to better understand buyer-supplier collaboration. The game is followed by a debriefing session that connects the game with theoretical concepts of practical relevance.

The **XBeerGame** provides students with an opportunity to experience a simplified chain of several actors in supply chain. It allows participants acquainting managing complex operations in a supply chain, experiencing the bullwhip effect and learning the impact of information sharing and communication. Yet it is more generically a great way to experience the impacts and challenges of collaborative decision making process in the overall performance of the simulated chain based on the profitability and customer satisfaction rate. It thus helps the students become better equipped to master and foster supply chain performance and innovation.

Courses contribution to program objectives

- Business core competences
- Complex problem handling
- Large scale vision

Learning Goals

- **Understand the fundamentals of management and management techniques.**
- The students will be able to analyze the supply chain performance criteria using simulation tools and describe trade-offs that must be considered when design, planning, and operational decisions are made in supply chain management.
- **Develop and master professional communication, teamwork and leadership**
- The students will be able to understand the benefits of information sharing with

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supply chain partners to improve the supply chain operations and know the importance of collaboration and coordination between supply chain entities.

- **Know the concepts and tools of management and apply them to sector-based specifics**

- The students will be able to identify the supply chain simulation tools and discuss what-if scenario and sensitivity analysis of managerial decisions.

Courses description

- The global approach for supply chain management

- The complexity in supply, transportation, and planning management

- The role of information sharing and bullwhip effect

- The collaboration benefits in the Supply Chain

COURSE MATERIAL

Textbooks

Weenk, E. (2019). Mastering the Supply Chain: Principles, Practice and Real-life Applications. Kogan Page Publishers.

Montreuil, B., Brotherton, E., Glardon, R., Yoo, M. J., Elamiri, Y., Borter, A. S., & Jermann, P. (2008, October). Experiences in using XBeerGame virtual gaming for learning supply chain management. In *2nd European Conference on Games Based Learning, Spain* (pp. 317-334).

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COURSE CONTENTS AND TIMETABLE

SESSIONS	TOPIC	PRELIMINARY READING AND ASSIGNMENTS	Lecturer
1	**ILOG (1):** Understand the game and all the parameters; Prepare an Excel tool		A. PIRAYSH
2	**ILOG (2):** Understand the links and the complexity between planning, production, warehousing, and distribution.	Preparation decisions	A. PIRAYSH
3	**ILOG (3):** Understand the links and the complexity between planning, production, warehousing, and distribution.	Preparation decisions	A. PIRAYSH
4	**ILOG(4):** Analyze the results of the simulation	Write report	A. PIRAYSH
5	**XBEERGAME (1):** Discover and experience the challenge and conflict of combined local and global optimization. Understand the forecasting based on historical data and the need of communication.		M. AMIRI AREF
6	**XBEERGAME (2):** Discover the impact of multiple markets and inventory management. Experience the supply chain value added and pressure of a dynamic market reacting to supply chain performances.	Discussion XBEERGAME	M. AMIRI AREF
7	**XBEERGAME (3):** XBeergame practice test	Discussion XBEERGAME	M. AMIRI AREF
8	**Collaboration game**		Yann BOUCHERY
9	Debrief of the collaboration game and exam preparation		Yann BOUCHERY
10	**Final exam**		

TEACHING APPROACH/ INSTRUCTIONAL METHODS

A Word of Advice

Active Involvement in the class activities, focused and maintain the team spirit.

Organization of the sessions

A mix of simulation game and presentation by the teacher.

Individual Assignments

Final exam	*60%*
Collaboration game-related exam	*20%*
iLog-related exam	*20%*
Beergame-related exam	*20%*

Group work

Group assessment	*40%*
iLog simulation results	*20%*
Beergame simulation report	*20%*

Methods Used to Evaluate Student Performance

Individual Assignments

Assessment Criteria

Section	Marks	Criteria
Systemic view	25	Ability to design a supply chain strategy to improve the global performance.
Supply Chain Management	25	Ability to understand the replenishment, storage and delivery problems in the supply chain
Optimization	25	Ability to exploit the information to improve the replenishment, storage and delivery decisions.
Collaboration	25	Ability to discover the benefits of collaboration between supply chain entities.

Collective assessment

Criteria of evaluation

Section	Marks	Criteria

Systemic view	25	Ability to design a supply chain strategy to improve the global performance.
Information Sharing	25	Ability to exchange key information with the supply chain partners.
Collaboration	25	Ability to exchange information and discuss the issues in a collaborative manner with supply chain entities.
Supply Chain Management	25	Ability to understand the replenishment, storage and delivery problems in the supply chain

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ASSESSMENT MATRIX

TRAITS		BELOW EXPATATIONS / NOT GOOD ENOUGH 0-1 points	MEETS EXPATATIONS / GOOD ENOUGH 2-3 points	ABOVE EXPATATIONS / SUPERIOR 4-5 points	Note /20	
Trait 1	**Ability to develop a collaborative SCM**	The student does not discuss the issues with other actors in SCM and is unable to communicate efficiently with other actors in SCM, so he/she fails in his/her task (lack of communication)	The student identifies correctly the key issues in collaborative Supply Chain Management but is not able to coordinate of operations with all other actors (lack of collaboration).	The student carries out an exact and complete analysis of his /her role, communicates effectively, and collaborates actively with other actors in SCM tasks.	/5	25%
Trait 2	**Ability to evaluate and discover innovative methods to improve the global performance in supply chain.**	The student is unable to identify the existing threats in supply chain and cannot make a pertinent analysis of the issues (lack of evaluation).	The student can come up with basic approaches to analyse the issues but they are not all exclusive. Analysis is partially correct (lack of innovation)	The student is able to analyse the supply chain performance correctly. He/she provides a pertinent and exhaustive approach to identify the risk factors and proposes an innovative method to cope with the existing issues in supply chain.	/5	25%
Trait 3	**Ability to analyze the Competitive challenges in supply chain management**	The student is unable to apply and design an integrated supply chain management and cannot make appropriate decisions in a dynamic environment (lack of cooperation and integration)	The student is able to apply cooperative techniques in competitive SCM, but not able to react properly in a timely manner (lack of planning and forecasting)	The student provides a pertinent assessment of the current situation considering the integration of all entities in supply chain and develops an exclusive planning in a competitive and dynamic environment proposing several scenarios to react properly against the competitors in the market.	/5	25%
Trait 4	**Ability to apply optimization methods for strategic and tactical decision in Supply Chain management.**	The student cannot exploit properly the available technical tools to optimize strategic decisions in supply chain or has no vision to apply in for long planning horizon (lack of strategic view).	The student develops several scenarios with a wider vision of strategic and operational processes. He/she uses the optimization tools to make feasible and justified solutions (lack of foreseeing the unexpected events).	The student enriches the optimization methods for a real and long-term planning and forecasts demand so that he/she can implement successfully the company's strategic solutions and directions.	/5	25%
TOTAL					/20	

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Yann Bouchery is Associate Professor in Operations Management and member of the Center of Excellence in Supply Chain at Kedge Business School. He holds a PhD in Industrial Engineering from Ecole Centrale Paris (France) obtained in 2012. Before joining Kedge Business School in 2019, he spent two years at Eindhoven University of Technology (The Netherlands) and five years at EM Normandie. His research interests focus on sustainable operations management and logistics and on the management of transportation systems in the hinterland of deep-sea ports. His work is published in international journals such as Production and Operations Management, Transportation Science, European Journal of Operational Research, International Journal of Production Economics. He has also co-edited a book entitled « Sustainable Supply Chains : A Research-Based Textbook on Operations and Strategy ».

Amir Pirayesh is Assistant Professor in Operations & Supply Chain Management. He received his Ph.D. in Industrial and Mechanical Engineering from Ecole Nationale Supérieure d'Arts et Métiers (ENSAM) where he was also Research Assistant and Lecturer (ATER). Before joining KEDGE, he was involved in several European projects, in the frame of H2020 programme and Factories of Future (FoF) initiative, as researcher of InterOP-VLab (the International Virtual Laboratory for Enterprise Interoperability). His teaching and research interests include the analysis of Manufacturing and Supply Chain Operations using Enterprise Modelling and Process Simulation (M&S Driven Enterprise Management), Interoperability Evaluation, Performance Measurement, and Risk Assessment. His research revolves also around various aspects of Servitization and Cyber Physical Production Systems (CPPS). He has contributed to several scientific publications.

Mehdi Amiri-Aref is Assistant Professor of Supply Chain Management at Kedge Business School, Bordeaux, France. Prior to that, he was a Postdoctoral Researcher at the same institution. He is also visiting scholar at University of Exeter Business School where he initiate several research projects in Operations and Supply Chain Management. He obtained his PhD degree in Industrial Engineering. His areas of research and teaching interests are design and management of supply chains, strategy of distribution logistics networks, and supply chain simulation. He was the principal author of several scientific articles published in international journals. As a researcher in the field of supply chain management, he is familiar with different implementation of inventory policies and analysis of forecasting methods, and can identify several transportation and distribution strategies. He has several years work experience in automotive and retail chain sectors worldwide.

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ACADEMIC FRAUD

Definition

Academic fraud is a breach of ethics.

"Is achieved using unfair means or deception, to obtain material or undue moral advantage, or with the intent to avoid the enforcement of laws". (Translated from the original source: Dictionnaire Juridique des Lois, 2010, available at: www.dictionnaire-juridique.com/definition/fraude/php)

Plagiarism consists of attributing authorship by (partial or total) copying, imitation or misappropriation.

The act of fraud is committed by one or more students/participants when they:

- appropriate written or oral work to themselves when they are not the author (in whole or in part) of the work, by omitting any references or quotations to the author or to the owner of the work;
- present any data that has been falsified or invented in any way;
- use the identity of the author, attributing the contents of and/or a resource to him/her, but without explicitly mentioning that they are not the author;
- appropriate the creative work of someone else and present it as their own;
- acquire exerts of texts, images, results etc. from external sources by including them in their own work without mentioning the origins of the exerts;
- summarise the original idea of an author by expressing it in their own words but omit quoting the source;
- cheat in an academic evaluation.

Plagiarism can occur in:

- an academic article or book;
- an exercise or a case study;
- a study or a report;
- a dissertation or a thesis;
- any document of which the student/participant is not, but purports to be the author.

Sanctions

Any student/participant having committed academic fraud, or having participated in it, will be sanctioned by the professor in charge of the course. The professor can apply 1st and 2nd level sanctions (detailed below). The professor will send a copy of the sanction to the student's/participant's programme. The student/participant will be informed/and or convoked by the programme director (or his/her representative) to a hearing prior to the possible convening of the Kedge Business School Disciplinary Council. In the case of a hearing of the Disciplinary Council, they can decide to apply 3rd and 4th level of sanctions.

Any student/participant guilty of academic fraud will receive one of the following sanctions:

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- Applied by the professor in charge of the course, Kedge Business School faculty member (1st and 2nd level):
  - A grade of zero for the work concerned and a formal warning;
  - A grade of zero for the course or module concerned and a formal warning.
- Applied by Kedge Business School's Disciplinary Council (3rd and 4th level):
  - Suspension from the programme for one or two semesters;
  - Exclusion from the programme.

N.B.: Plagiarism within a partner institution can result in these sanctions being applied by Kedge Business School, notwithstanding partner's decision.