

COURSE OUTLINE: LOGISTICS

GENERAL

SCHOOL	ECONOMICS AND BUSINESS		
ACADEMIC UNIT	ECONOMICS		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	OE808	SEMESTER	8th (Major C)
COURSE TITLE	LOGISTICS		
INSTRUCTOR(S)	Professor I.S. Kevork		
INDEPENDENT TEACHING ACTIVITIES <i>if credits are awarded for separate components of the course, e.g. lectures, laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits</i>		WEEKLY TEACHING HOURS	CREDITS
		3	6
<i>Add rows if necessary. The organisation of teaching and the teaching methods used are described in detail at (d).</i>			
COURSE TYPE <i>general background, special background, specialized general knowledge, skills development</i>	SPECIAL BACKGROUND – OPTIONAL, MAJOR: BUSINESS ECONOMICS		
PREREQUISITE COURSES:	NO		
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	GREEK		
IS THE COURSE OFFERED TO ERASMUS STUDENTS	YES		
COURSE WEBSITE (URL)	https://www.econ.uth.gr/		

LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*
- *Guidelines for writing Learning Outcomes*

Upon successful completion of the course, students will be able to:

- (a) Develop inventory policies for two-stage supply chains with constant demand in the cases of (i) multiple products and (ii) ordering with total-order quantity discounts or incremental quantity discounts.
- (b) Apply continuous-review inventory systems in supply chains with stochastic demand.
- (c) Understand the barriers to coordination in a supply chain and propose appropriate managerial mechanisms to improve coordination.
- (d) Quantify the benefits of information sharing in supply chains with stochastic demand under a target inventory level policy.

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?

<i>Search for, analysis and synthesis of data and information, with the use of the necessary technology</i>	<i>Project planning and management</i>
<i>Adapting to new situations</i>	<i>Respect for difference and multiculturalism</i>
<i>Decision-making</i>	<i>Respect for the natural environment</i>
<i>Working independently</i>	<i>Showing social, professional and ethical responsibility and</i>
<i>Team work</i>	<i>sensitivity to gender issues</i>
<i>Working in an international environment</i>	<i>Criticism and self-criticism</i>
<i>Working in an interdisciplinary environment</i>	<i>Production of free, creative and inductive thinking</i>
<i>Production of new research ideas</i>	<i>.....</i>
	<i>Others...</i>
	<i>.....</i>

The course aims at the following general competencies:

- Search for, analysis and synthesis of data and information with the use of the necessary technology,
- Decision making,
- Promotion of free, creative and inductive thinking,

and the following specific objectives:

- (a) the development of inventory policies in supply chains under alternative demand patterns at product points of sale,
- (b) the benefits and barriers associated with efforts to coordinate the different stages of the supply chain, and
- (c) the implementation and evaluation of information-sharing programs in supply chains.

SYLLABUS

MANAGING ECONOMIES OF SCALE IN SUPPLY CHAINS WITH CONSTANT DEMAND:

Definition of a supply chain, Product flow time in a supply chain, Little's Law, Lot or batch size, Cycle inventory, Inventory cycle, Lead time, Cost components, Fixed and variable inventory replenishment costs, Inventory holding cost per unit of product per unit of time, Economic Order Quantity (EOQ) model, Optimal lot size, Lot-size selection with multiple products, Ordering under quantity discount pricing schemes, Multi-block tariffs, Optimal lot sizes in a two-stage supply chain, Retailer cost minimization, Supply chain total cost minimization.

SUPPLY CHAIN MANAGEMENT WITH STOCHASTIC DEMAND: On-hand stock, Net stock, Complete backordering, Complete lost sales, Safety stock, Cycle service level, Continuous-review inventory system, Calculation of the cycle service level for a given reorder point, Calculation of safety stock and the reorder point for a given target service level, Calculation of the product fill rate for a given reorder point, Expected shortage per replenishment cycle, Product fill rate for a given reorder point, Impact of supply uncertainty on safety stock.

COORDINATION IN A SUPPLY CHAIN: The bullwhip effect, The Procter & Gamble and Barilla examples, Consequences of the bullwhip effect, Increase in supply chain production cost, Increase in inventory cost, Increase in replenishment lead times, Increase in transportation cost, Increase in labor cost for shipping and receiving, Lack of product availability, Adverse relationships among supply chain members, Obstacles to coordination in a supply chain, Incentive obstacles, Information-processing obstacles, Operational obstacles, Rationing and shortage gaming, Pricing obstacles, Managerial mechanisms for improving coordination, Alignment of goals and incentives, Improvement of information visibility and accuracy, Continuous Replenishment Programs (CRP), Vendor-Managed Inventory (VMI), Improvement of operational performance to synchronize supply and demand, Reduction of replenishment lead times, Reduction of lot sizes.

DYNAMIC EVOLUTION OF A SUPPLY CHAIN WITH $ARMA(p, q)$ DEMAND: Demand models at the retailer and supplier, Dynamic evolution of retailer orders with demand, Minimum Mean Square Error (MMSE) forecasts, Forecast errors of actual demand, Target inventory level at the end of each time period, Safety stock, Cycle service level, Bullwhip ratio under MMSE forecasting, Dynamic evolution of supplier orders: Full Information Sharing scenarios.

TEACHING and LEARNING METHODS - EVALUATION

DELIVERY <i>Face-to-face, Distance learning, etc.</i>	Face-to-face
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY <i>Use of ICT in teaching, laboratory education, communication with students</i>	The learning process is supported through the use of (a) the electronic platform e-class and the institutional email, (b) Microsoft EXCEL, and (c) the packages MINITAB and e-VIEWS
TEACHING METHODS	

<i>The manner and methods of teaching are described in detail. Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc. The student's study hours for each learning activity are given as well as the hours of non-directed study according to the principles of the ECTS</i>	The lectures are delivered in the classrooms of the Department of Economics through the use of Microsoft Office 365 tools (Word, EXCEL, Power-Point). Before each lecture, slides and supporting material have already been posted on the course electronic platform “e-class”, so that students can have access to them during the lecture. The existing technological equipment of the above rooms also enables the use of an electronic whiteboard through a WACOM device, which allows writing in presentations and texts with storage capabilities of rich texts and presentations. The enriched texts containing comments on the lectures and solutions to exercises and problems are also posted in the e-class after the end of each lecture. This uploaded material on e-class includes also files containing additional problems and exercises that students are invited to solve in order to practice and understand the taught material. Solutions and comments on these problems are given either during lectures or during office hours announced by the teacher responsible (in special cases even via e-mail using students’ institutional accounts) More specifically, the workload of the module is analyzed as follows:																
	<table border="1"> <thead> <tr> <th>Activity</th><th>Semester workload</th></tr> </thead> <tbody> <tr> <td>Lectures</td><td>39 hours</td></tr> <tr> <td>Study at home</td><td>85 hours</td></tr> <tr> <td>Solution of Problems</td><td>30 hours</td></tr> <tr> <td>Preparation for written exams</td><td>24 hours</td></tr> <tr> <td>Final written Exam</td><td>2 hours</td></tr> <tr> <td></td><td></td></tr> <tr> <td>Course total</td><td>180</td></tr> </tbody> </table>	Activity	Semester workload	Lectures	39 hours	Study at home	85 hours	Solution of Problems	30 hours	Preparation for written exams	24 hours	Final written Exam	2 hours			Course total	180
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STUDENT PERFORMANCE EVALUATION <i>Description of the evaluation procedure</i> <i>Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer</i>	Course assessment is based on the following: A) Optional Written Midterm Examination on the thematic topic “MANAGING ECONOMIES OF SCALE IN SUPPLY CHAINS WITH CONSTANT DEMAND.” The midterm examination grade accounts for 40% of the overall grade, applicable only to the June examination period.																

questions, open-ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other. Specifically-defined evaluation criteria are given, and if and where they are accessible to students.	B) Written examination during the June examination period covering the remaining thematic topics of the course. The written examination grade accounts for 60% of the overall grade for the June examination period. Students who do not participate in the Optional Written Midterm Examination will sit a written examination during the June examination period covering all thematic topics of the course syllabus, and the examination grade will account for 100% of the final grade. SEPTEMBER EXAMINATION PERIOD: Written examination covering all thematic units of the course syllabus. The written examination grade accounts for 100% of the final grade for the September examination period.
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ATTACHED BIBLIOGRAPHY

SUPPLY CHAIN MANAGEMENT: STRATEGY, PLANNING, AND OPERATION

Edition: 8th

Authors: Sunil Chopra, Peter Meindl

Publisher: Pearson

LOGISTICS & SUPPLY CHAIN MANAGEMENT

Edition: 6th

Authors: Christopher Martin

Publisher: **FT Publishing International**

Ali, M.M., Boylan, J.E. & Syntetos A.A. (2011). Forecast errors and inventory performance under forecast information sharing. *International Journal of Forecasting*

Alwan, L.C., Liu, J.J. & D-Q, Y. (2003). Stochastic characterization of upstream demand processes in a supply chain. *IIE Transactions*, 35:3, 207-219

Lee, H.L., SO, K.C., Tang, C.S., (2000). The value of information sharing in a two-level supply chain. *Management Science* 46(2), 626-643

Kevork, I.S. (2018). Benefits of vendor managed inventory programs in two-stage supply chains. 14th International Conference on Industrial Logistics 15-17 May Beer-Sheva Israel, ICIL 2018 Conference Proceedings, pp. 99-107

Κεβόρκ, Η.Σ. (2018). Ένα μικροοικονομικό υπόδειγμα εφοδιαστικής αλυσίδας δυο σταδίων με αυτοσυσχετιζόμενη ζήτηση. Κείμενα στην Οικονομική της Άμυνας και της Ασφάλειας, επιμέλειας Η.Σ. Κεβόρκ & Χ.Γ. Κόλλια, σελ. 419-449, Πανεπιστημιακές Εκδόσεις Θεσσαλίας

Related Academic Journals: European Journal of Operational Research, OMEGA-The International journal of Management Science, Management Science, IMA-Journal of Management Mathematics, International Journal of Forecasting, International Journal of Production Economics, Decision Sciences, Applied Economics, The Journal of Operational Research Society.