



UNDERGRADUATE STUDY: **ITS AND LOGISTICS**

SEMESTER (III)

Syllabus

Academic year 2025/2026

Course: Inventory Management					
Head of course: Prof. Mario Šafran , Ph.D.					
Co-lecturers: Asst. Prof. Diana Božić , Ph.D.					
Semester: W	Course code:	Lectures: 30	Auditory exercises: 20	Laboratory exercises: 10	ECTS credits: 6
Group for lectures: 15 students			Group for auditory and laboratory exercises: 15 students		

Objective of the course:

- The course is divided into three main parts. Part I covers an introduction to inventory management with fundamental inventory division and a review of the characteristics of each inventory class. Part II covers the determination and calculation of the value of inventory, inventory management in the distribution chain, and its optimization. Real-life examples of inventory optimization taken from the automotive industry are covered in this part. Part III encompasses control of inventory quantity, designing the system of acquiring materials, control of the assets, the application of inventory classification (ABC and XYZ) methods in managing stocks of goods - management by exception, purchase and distribution logistics as part of the transport logistics of inventory management, safety stock, Pareto diagram, and economic quantity order.

Learning outcomes:

After the completion of the course, the students will be able to:

1. Cite basic terms of inventory management
2. Explain the methods of valuing quantity and cost-effectiveness of inventory.
3. Apply data for calculating factors that influence inventory management.
4. Comment on the existing inventory management system on the basis of the calculation of turnover coefficient and service level.
5. Analyse data for the purpose of applying the inventory categorization method.
6. Categorise the inventory on the basis of applied methods.



LECTURES and EXERCISES

Week	Syllabus	Form of classes	Performed by	Lessons	Remark
1.	The first lecture with an introduction note will inform the students about the importance of supply management, providing knowledge about the content, basic terminology used, and definition of the subject. Also, the lecture informs students about the functioning of the supply chain and supply management.	L	Mario Šafran	3	
	Following the introduction lectures, students will see specific issues regarding supply management when researching the field. Research is based on calculations, statistics, and measuring performance activities. Students will know the difference and the right way to examine the field of supply management.	AE	Diana Božić	1	
2.	The lecture will define the structure and basic division of supplies in the supply chain. It will include the appearance and the negative and positive aspects of each type of supply, terminology, and definitions of each supply group.	L	Mario Šafran	3	
	Following the lectures, the practicum will include calculating the amounts of supplies in the distribution chain. Part 1	AE	Diana Božić	1	
3.	The lecture will propose the characteristics of supply types, with possible reasons for appearance and ways to reduce them. Every supply type will be presented in an industry group, with positive and negative influences on the business.	L	Mario Šafran	2	
	Following the lectures, the practicum will include calculating the amounts of supplies in the distribution chain. Part 2	AE	Diana Božić	2	



4.	The lecture will provide certain knowledge about the importance of constantly determining the value of supplies in the companies. It will include the possible effect of false planning and the amounts of supplies that are losing the value according to wrong procurement.	L	Mario Šafran	2	
	Practicum will contain calculation of wrong procurement and their effect on the supply management. Also, it will present the possible directing of supplies in the supply chain.	AE	Diana Božić	2	
5.	The lecture will propose certain knowledge about specifics regarding supply management in supply chains. It will include organizational structure, information systems, the importance of human resources, etc.	L	Mario Šafran	2	
	In the practicum, there will be presented researches regarding supply management issues, benefits of changing organizational structure, and other possible impacts on supply management.	AE	Diana Božić	2	TEST 1
6.	Categorization of the inventory (ABC), policy models in inventory management, Pareto law, deterministic and stochastic demand	L	Mario Šafran	2	
	Solving the problems by calculating inventory categorization and creating a Pareto diagram, calculating basic EOQ, inventory cycle, lead time, reorder point, and time cycle.	AE	Diana Božić	2	
7.	Introduction to applied software environment (Excel, Winqs). Solving inventory problems with software: Economic Order Quantity, inventory cycle, lead time with continuous demand, reorder point.	LE	Diana Božić	4	



8.	Solving inventory problems for planning inventory in lot-size production, deterministic demand.	LE	Diana Božić	4	
9.	Solving problems for determination of service level and safety stock, inventory models with amount discount.	LE	Diana Božić	4	
10.	The lecture will include basic knowledge about the procurement of supplies, amounts of products, and materials. It will propose certain methods that will affect the in-time procurement. Also, planning methods and division will be presented	L	Mario Šafran	2	
	Following the lectures, the practicum will propose the calculation of the needed amount of supplies and benefits by reducing the amount for the suggested percentage. Also, calculations will include overhead expenses, equipment etc.	AE	Diana Božić	2	
11.	The lecture will include a presentation on supply management from the aspect of the automotive industry, the complexity of order in this industry, the effects of the recession, and the financial solvency of consumers. Also, it will include an overview of the basic supply division and the appearance of each supply type in the automotive industry.	L	Mario Šafran	2	
	Practicum will include calculating the presented optimization of supply management in the automotive industry, including interest and planning the demand.	AE	Diana Božić	2	
12.	The lectures will provide knowledge regarding supply management in production, basic levels of production, and materials needed. It will include terminology used as gross and net amounts and definitions in production.	L	Mario Šafran	2	



	Following the lectures, students will learn to calculate procurement of needed material for orders made, calculating the dates of delivery, procurement, and expenses.	AE	Diana Božić	2	
13.	The lecture will include basic knowledge about the control of the assets, used terminology, and definitions. It will include observations on current assets and fixed assets, sales, price, and effects on supply management.	L	Mario Šafran	2	
	Following the lectures, the practicum will include asset calculations. Calculations result in the return of the assets after minimizing the number of supplies in the company.	AE	Diana Božić	2	TEST 2
14.	The lecture will include basic knowledge about the e-control of the assets, used terminology, and definitions. It will include observations on current assets and fixed assets, sales, price, and effects on supply management.	L	Mario Šafran	3	
	Following the lectures, the practicum will include asset calculations. Calculations result in the return of the assets after minimizing the number of supplies in the company.	AE	Diana Božić	1	
15.	Seminar	AE	Diana Božić	3	

L = Lectures; **AE** = Auditory Exercises; **LE** = Laboratory Exercises; **S** = Seminars



STUDENT OBLIGATIONS AND EXAMS

Conditions for obtaining signatures:

During the semester students have the option of taking two tests. Each test consists of numerical and theoretical questions (or their combination) in which it is possible to achieve a maximum of 80 points. Students who achieve a total of 20 points or more have the option of taking the second test. Students who achieve a total of 20 points or more on the second test are exempted from a written exam. Students who do not achieve a minimum of 20 points have to take a written exam. The written and oral exam is provided for all students, regardless. To pass the written exam it is necessary to answer 51% of questions correctly, and the grading system is shown in paragraph 4 (Course gradation). Students are required to attend lectures and exercises. Students who at the end of the semester have a minimum of 70% of attendance get 20 points (10 points for lectures and 10 points for exercises attendance). Students who do not achieve those points have to take the course once again. In the case of justified absences (more than 3 times during lectures and more than 3 times for exercises), students have to submit medical records or other official records (which are subject to verification). After a successful verification process, students get 20 points.

LITERATURE

a) Obligatory literature:

1. Blanchard, D.: Supply Chain Management Best Practices, John Wiley & Sons Inc., 2021. ISBN 9781119738237
2. Piasecki, D.J.: Inventory Management Explained: A focus on Forecasting, Lot Sizing, Safety Stock, and Ordering Systems, Ops Publishing, ISBN 0972763112, 2009.
3. Waters, D.: Logistics-An Introduction to Supply Chain Management, Palgrave Macmillan, Great Britain, 2003
4. Šafran, M., Božić, D.: Authorised lectures and exercises, the Internet site of Faculty of Transport and Traffic Sciences (e-student),
5. Stanton, D.: Supply Chain Management for Dummies, John Wiley & Sons Inc., 2021. ISBN 978-1-119-67701-7

b) Recommended literature:

1. Piasecki, D.J.: Inventory Management Explained: A focus on Forecasting, Lot Sizing, Safety Stock, and Ordering Systems, Ops Publishing, ISBN 0972763112, 2009.



METHODOLOGY OF THE IMPLEMENTATION OF THE COURSE PLAN

1. LECTURES

Lectures follow specific topics from compulsory literature and are performed using PowerPoint presentations (can be in English). The use of a textbook and recommended literature allows students to prepare the lecture topics in advance. Authorized lectures are published on the student's portal on the Faculty internet site (e-student). The students are encouraged to read the topic of the forthcoming lecture in advance and to take part in the pro-active discussion.

2. AUDITORIAL EXERCISES

Students solve problems by calculating inventory policies using applied methods. During working in the PC laboratory students solve problems using MS Excel. During exercises, students are required to have: a description and elaboration of the problem which is done during the lecture.

3. LABORATORY EXERCISES

While working in a PC laboratory students solve problems using MS Excel.



4. DOCUMENTATION

The student's attendance record is kept during the semester. Achievements of goals are recorded by continuous monitoring in the information system ISVU. All tests are kept in the lecturer's file for one year.

5. SCORING SYSTEM

Table 1 The scoring system for the monitoring of students and explained credit values in ECTS credits

no	Segment:	Required credits to be achieved:		Remark:	ECTS credits
		Min.	Max.		
1.	Lectures attendance	10	10	Presence $\geq 70\%$	1
2.	Exercise attendance	10	10	Presence $\geq 70\%$	1
3.	Test 1	20	40	<i>50% minimum</i>	(1)
4.	Test 2	20	40	50% minimum	(1)
5.	Written exam	40	80	<i>50% minimum</i>	2
6.	Oral exam				2
Σ		60	100		6



Table 2 - Explanation of the credit values in evaluations

CREDITS:	Estimate based on attendance, seminar paper and two colloquies (or written exam) - [4 ECTS]:	The final score [6 ECTS]:
60 - 70	Sufficient (2)	
71 - 80	Good (3)	
81 - 90	Very good (4)	
91 - 100	Excellent (5)	

Information for students (scoring system, implementation plan, learning outcomes, syllabus, literature, consulting teachers, announcement of results of examinations or colloquium, and all other information):

- <https://moodle.srce.hr/2025-2026/>
- <http://www.fpz.unizg.hr>

Student assistants:

Additional individual work with the students through individual consultations.