

Logistic Information Systems

Code: 42655
ECTS Credits: 16.5

Degree	Type	Year	Semester
4313489 Logistics and Supply Chain Management	OT	2	1

Contact

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Use of Languages

Principal working language: english (eng)

External teachers

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Prerequisites

None

Objectives and Contextualisation

This module has 3course units:

CU1: Logistics Information Systems (9 ECTS)

This course "Information technologies in logistics" is an important component part of logistics specialist theoretical training that enables students to effectively work in the area of business logistics, based on use of modern information technology.

After the course, students are expected to be able:

- to consider, interpret and use professional terminology in logistics and related information technologies area
- to discuss about the information technologies in logistics, to analyze problems and trends of the industry
- to solve thematic tasks in the field of logistics IT and to compare results of different solution scenarios and its performance results
- to describe the relevance of the chosen logistics information technology topics, to classify existing solutions, analyze the existing problems and trends

CU2: Electronic Commerce in Logistics (4,5 ECTS)

This course "Electronic Commerce in Logistics" is an important component part of theoretical training for logistics specialists enabling an effective work in the area of electronic commerce by using advanced internet solutions.

After the course, students are expected to be able:

- To define, interpret and use professional terminology in the area of electronic commerce.
- To develop a project of e-commerce system.
- To evaluate designing and implementation techniques of e-commerce solutions.
- To explain the essence of application, possibilities and importance of information technologies in different areas of e-commerce.

CU3: Systems Analysis (3 ECTS)

The goal of the course is to acquire basic principles of logistics information systems analysis, system classifications, characteristics, basics of process theory, modelling and characteristics of complex system functioning, organization of logistics information system analysis process, its methods, and software-oriented notations.

After the course, students are expected to:

- be able to identify tasks of logistics information systems analysis
- have modelling and decision analysis skills and understand organizational requirements in case of new solutions and changes concerning logistics information systems
- know how to decompose the systems and analyse their structure
- know the basics of process theory, modelling and general characteristics of system functioning
- understand organization of logistics information systems analysis process and is able to apply corresponding methods

Competences

- Apply a rigorous and efficient approach to problem solving.
- Apply quantitative methods and techniques based on optimisation and/or simulation models in order to evaluate the different alternatives and select the most promising solution to be implemented
- Possess and understand knowledge that provides a basis or opportunity for originality in the development and/or application of ideas, often in a research context
- Select and apply the most relevant analytical methodologies, strategies and current technologies for designing solutions to the problems of management and coordination of material, information and financial flows.
- Student should possess an ability to learn that enables them to continue studying in a manner which is largely self-supervised or independent
- Work collaboratively in a group.

Learning Outcomes

1. Apply a rigorous and efficient approach to problem solving.
2. Identify the IT needs in specific logistics systems and select the solution to be implemented.
3. Know the Logistic Information Systems and major LIS subsystems, its functionality, architecture and principles
4. Know the tools of electronic commerce and understand the development principles of e-commerce systems.
5. Possess and understand knowledge that provides a basis or opportunity for originality in the development and/or application of ideas, often in a research context
6. Student should possess an ability to learn that enables them to continue studying in a manner which is largely self-supervised or independent
7. Understand the basic concepts of system analysis, system characteristics, laws, principles, structure and models.
8. Understand the reliability principles and mechanisms of LIS and e-commerce systems.
9. Understand the use of data identification, processing, tracking and tracing technologies in Logistics and Supply Chain Management.
10. Work collaboratively in a group.

Content

CU1: Logistics Information Systems (9 ECTS)

In this course, the basics of logistics information technologies are examined; a special attention is paid to the basic functioning principles of logistics information systems and to the information technologies used in logistics, such as tracking and tracing technologies, object identification technologies, communication technologies. There are also examined examples of IT applications in the purchasing, manufacturing, distribution, transportation, inventory and warehouse logistics.

List of topics:

- The role of information technologies in LSCM.
- Basics of enterprises' information systems: introduction to IT, information systems in the enterprise, electronic business and electronic commerce, IS hardware and software, managing data resources, etc.
- Major subsystems and internal operation of logistic information systems
- Basic information technologies in logistics:
 - tracking & tracing (GPS, Galileo, etc.),
 - identification (barcoding, RFID),
 - communication (wireless, mobile, networking, EDI, etc.).
 - IT applications to support logistics functions (warehouse, inventory, transportation customer relationship management information systems, enterprise resource and supply chain planning, production planning and control information systems, supply chain event management information systems, etc.).

CU2: Electronic Commerce in Logistics (4,5 ECTS)

This study course covers the key concepts of electronic commerce and its application in logistics area that includes the organization of commercial activities and logistics systems management in the Internet using the advanced Web 2.0 and 3.0 technologies, by devoting the accent to the B2B, B2C, C2C, C2B and C2G models of the electronic commerce. By characterizing the electronic commerce concepts, the management problems of electronic business, as well as of material, information and financial flows are examined there. In this course, a special attention is paid to the development and implementation technologies, as well as to application and integration of principles of electronic commerce systems in logistics and supply chain management by taking into account the activities of Internet service providers, electronic payment methods, social networking and e-commerce security aspects. During practical lessons, an opportunity to obtain practical skills in the integration of e-commerce and logistics systems based on B2B system use case is supported there.

List of topics:

- E-commerce in logistics: object of e-commerce, history and development stages, influence on economy.
- E-commerce information technology: electronic data interchange, standards and classifiers, data identification methods.
- Information systems of e-commerce: classification, models, e-payment, e-document and e-government systems.
- Electronic business and marketing.
- Development of e-commerce systems: design, programming, testing and maintenance.
- Reliability of e-commerce information systems.
- Efficiency of e-commerce information systems.
- Integration of e-commerce and logistics: e-logistics.

CU3: Systems Analysis (3 ECTS)

The course concerns systems analysis tasks in the context of logistics information systems. It focuses on logistics information system modelling, decision analysis and organizational requirements for new solutions and changes. Functional decomposition and methods of structural analysis are included in the course. Students learn system classifications and characteristics and general systems laws. Basics of process theory, modelling and characteristics of complex system functioning as well as organization of logistics information systems analysis process, its methods, and software-oriented notations are discussed.

List of topics:

- Tasks of logistics information systems analysis
- Modelling, decision analysis and organizational requirements for new solutions and changes
- Functional decomposition and structural analysis
- System's classifications and characteristics
- General system's laws
- Basics of process theory, modelling and general characteristics of system functioning
- Organization of logistics information systems analysis process and its methods
- Software-oriented notations of systems analysis process

Methodology

Teaching will be offered on campus or in an on-campus and remote hybrid format depending on the number of students per group and the size of the rooms at 50% capacity.

CU1: Logistics Information Systems (9 ECTS)

The course is organized by means of traditional lectures combined with seminars and practical work. The learning process will combine the following activities:

- Classroom sessions: include theory lectures, discussions and seminars for understanding the main using of information technologies
- Practise sessions: Laboratory works aimed to demonstrate the ability to perform assigned tasks, carrying out different tasks scenarios and comparative analysis of its results.
- Essay elaboration and presentation: In-class presentations on the essay topics related to IT in logistics with further discussions with the audience
- Autonomous work

Practical cases and essay about using information technologies to support logistics functions are used for promoting students hand on skills.

CU2: Electronic Commerce in Logistics (4,5 ECTS)

The course is organized by means of traditional lectures combined with seminars and practical work. The learning process will combine the following activities:

- Classroom sessions: include theory lectures, discussions and seminars for understanding the main usage, possibilities and trends of e-commerce.
- Practise sessions: Laboratory works aimed to demonstrate the ability to perform assigned tasks, carrying out different tasks scenarios and comparative analysis of results.
- Essay elaboration and presentation: In-class presentations on the essay topics related to IT in logistics with further discussions with the audience.
- Autonomous work.

Practical cases and essay about using information technologies to support logistics functions are used for promoting students hand on skills.

CU3: Systems Analysis (3 ECTS)

The course is organized by means of traditional lectures combined with group and individual practice sessions. The learning process will combine the following activities:

- Lectures, where the basics of the theories and methods are explained
- Group practice sessions, where students can share their knowledge and train their collaborative skills in systems analysis tasks
- Individual sessions where students shall perform the tasks individually to train their independent work skills

- Individual assignments where students autonomously have fulfil the tasks without the help of the teacher.

The proposed teaching methodology may undergo some modifications according to the restrictions imposed by the health authorities on on-campus courses.

Annotation: Within the schedule set by the centre or degree programme, 15 minutes of one class will be reserved for students to evaluate their lecturers and their courses or modules through questionnaires.

Activities

Title	Hours	ECTS	Learning Outcomes
Type: Directed			
CU1. Practise sessions	64	2.56	3, 4, 2, 6, 5
CU1. Theory lectures	64	2.56	3, 4, 8, 9, 10
CU2. Practise sessions	20	0.8	4, 2, 6, 5
CU2. Theory lectures	30	1.2	4, 8, 10
CU3. Introduction of practice sessions	4	0.16	7, 3, 4, 9, 2, 1
CU3. Lectures	16	0.64	7, 3, 4, 9, 2, 1
Type: Supervised			
CU1. Student presentation on the research topic	16	0.64	7, 3, 8, 9, 1, 10
CU1. Test on ITL	8	0.32	3, 4, 8, 9, 10
CU2. Student presentation on the research topic	2	0.08	7, 8, 1, 10
CU3. Group sessions	6	0.24	7, 3, 4, 9, 2, 1, 10
CU3. Individual sessions	6	0.24	7, 3, 4, 9, 2, 6, 1
Type: Autonomous			
CU1. Individual research essay	35	1.4	7, 3, 4, 2, 6, 1, 5
CU1. Mastering in the lectured course material	36.5	1.46	3, 4, 8, 9, 5, 10
CU2. Individual research essay	32	1.28	7, 4, 2, 6, 1, 5
CU2. Mastering in the lectured course material	27	1.08	4, 8, 5, 10
CU3. Individual home assignments/exam	28	1.12	7, 3, 4, 2, 6, 1
CU3. Mastering the course lecture material	15	0.6	7, 6, 1, 5, 10

Assessment

The proposed evaluation activities may undergo some changes according to the restrictions imposed by the health authorities on on-campus courses.

CU1, CU2 and CU3

There are three separate final exams per module covering courses CU1, CU2 and CU3. It is comprised of theoretical questions and small cases on topics addressed throughout the semester in order to present generic understanding on logistic information systems in correspondence to learning objectives. The final exam is run in a written form or electronically; cases might require additional performance on paper or by applying specific software packages evaluated as part of the exam.

The student passes the module if the practical assignments, project and the final exam are evaluated "sufficient" (grade 4.0 corresponding to a minimum of 50% of the maximum performance per evaluation activity) at least. The student fails if performance in at least one of the evaluation activities does not reach the 50% threshold or if practical assignments and project reports are not submitted within the due date specified by the professor.

In case of fail, the student needs to retake just that part of module exam s/he failed. The decision about this is in hands of the examiner. If any of the practical assignments or the project are failed, the student will either be provided with a new assignment/project or asked to re-submit its report according to the corrections/indications provided by the professor.

Students who fail an exam may be permitted the opportunity to retake this examination twice at a maximum. After that, his/her right for examination terminates. Retaking an exam is allowed only in case the student previously failed, but not to improve grades achieved so far.

Examination dates are announced in due time, but at least two weeks prior to the respective exam. Submission deadlines for practical assignments, project reports and any presentation activities related to them are announced when giving assignments/project to students. The final exam and a first opportunity for eventually retaking it are scheduled within specified examination periods. Specific examination dates are published on the local LSCM website.

CU1: Logistics Information Systems (9 ECTS)

The final grade will be calculated from the assessment of different evaluation activities:

- Individual research essay: Report on the individual research about using information technologies to support logistics functions. Includes oral presentation of the research results on the essay topic
- Laboratory work: Laboratory studies in the field of logistics information technologies and systems
- Written exam. Students have to answer 2 theoretical question on the topics discussed during lectures

CU2: Electronic Commerce in Logistics (4,5 ECTS)

The final grade will be calculated from the assessment of different evaluation activities:

- Individual research essay: Report on the individual applied research of e-commerce technologies. Includes oral / visual presentation of the research results on the essay topic.
- Laboratory work: Laboratory studies in the field of e-commerce and logistics integration.

Written exam. Students have to answer 3 theoretical questions on the topics discussed during lectures.

CU3: Systems Analysis (3 ECTS)

The final grade will be calculated from the assessment of different evaluation activities (note - the grading basically is made for the practical work the students do during different sessions):

- Grades obtained in group sessions
- Grades obtained in individual sessions
- Grades obtained in home assignments
- Examination (may be in the form of assignments)

The weights of each evaluation activity are given in the table below.

Assessment Activities

Title	Weighting	Hours	ECTS	Learning Outcomes
CU1. Exam	40%	2	0.08	3, 4, 8, 9, 2
CU1. Individual research essay	35%	1	0.04	7, 3, 4, 2, 6, 1, 5
CU1. Laboratory work	25%	0	0	7, 3, 4, 6
CU2. Exam	40%	0	0	4, 8, 1
CU2. Individual research essay	35%	0	0	7, 4, 2, 6, 1, 5
CU2. Laboratory works	25%	0	0	4, 2, 6, 10
CU3. Group and individual sessions	40%	0	0	7, 3, 4, 9, 2, 1, 10
CU3. Individual home assignments/examination)	60%	0	0	7, 3, 4, 9, 2, 6, 1

Bibliography

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Software

- Modelling Software Aimsun <https://www.aimsun.com/>
- Vitech Core Modelling Software <https://www.vitechcorp.com/>