Logistics System Implementation and Ramp-Up

Code: 44770
ECTS Credits: 10

2024/2025

Degree	Type	Year
4318306 Logistics and Supply Chain Management	OT	2

Contact

Name: Juan Jose Ramos Gonzalez

Email: juanjose.ramos@uab.cat

Teachers

(External) Prof. Dr. Gaby Neumann

(External) Prof. Dr. Henning Strubelt (University of Applied Sciences Bremerhaven)

(External) Prof. Dr. Jens Wollenweber

(External) Prof. Dr. Thomas Masurat

Teaching groups languages

You can view this information at the end of this document.

Prerequisites

The student has to have successfully passed the following subjects:

- Decision making (44760)
- Systems Thinking (44759)
- Generic Management Skills (44764)

Objectives and Contextualisation

This module has three course units: System Dynamics in Production and Logistics (Prof. Dr. Thomas Masurat, Prof. Dr. Gaby Neumann), System implementation and ramp-up (Prof. Dr. Henning Strubelt), and LSCM Project Work (Prof. Dr. Thomas Masurat, Prof. Dr. Gaby Neumann, Prof. Dr. Jens Wollenweber)

CU1: System Dynamics in Production and Logistics (5 ECTS)

After the course the student will be able to:

- understand the needs for networked/system thinking
- model, analyse, manage complex socio-economic systems
- understand chances and opportunities from scenario management

- detect, identify and evaluate identify important factors, which will have an influence on the future development of companies and business fields
- apply scenario management procedure, methods, tools for planning, managing and controlling implementation and launching of logistics systems
- make decisions in complex situations
- elaborate solid arguments to convince and motivate decision makers, select the proper partners and then plan and coordinate the project to implement the solution

CU2: System implementation and ramp-up (2.5 ECTS)

After the course the student will be able to:

- understand challenges in implementing and launching logistics systems
- apply procedure, methods, tools for planning, managing and controlling implementation and launching of logistics systems
- address problems in logistics system implementation and ramp-up in a holistic approach
- elaborate solid arguments to convince and motivate decision makers, select the proper partners and then plan and coordinate the project to implement the solution

CU3: LSCM Project Work (2.5 ECTS)

After the course the student will:

- Understand strategies, challenges, solutions, latest developments, ongoing research related to logistics processes and systems, their implementation and ramp-up, their management and control
- Understand specific requirements of logistics system implementation and ramp-up and their complexity
- Be able to identify and specify chances and risks in logistics systems and supply chains
- Be able to search for and report on state-of-the-art
- Be prepared for Master thesis

Learning Outcomes

1. CA24 (Competence) Tackle implementation and start-up issues within logistical systems from a holistic perspective.
2. CA25 (Competence) Develop robust arguments that will convince/motivate decision-makers, select suitable partners and subsequently plan and coordinate the project in order to implement the solution.
3. CA26 (Competence) Review relevant scientific and specialist literature to compile the state of the art and thus identify strategies, challenges, solutions, recent developments and ongoing research related to logistics processes and systems, their application, implementation, management and supervision.
4. KA27 (Knowledge) Identify and evaluate important factors that will influence how companies and business sectors develop in the future.
5. KA28 (Knowledge) Identify the needs of systems and network thinking to manage complex socio-economic systems.
6. SA36 (Skill) Use procedures, methods and tools such as scenario management to support decision-making in complex situations that stem from the planning, management and supervision of the implementation and launch of logistics systems.
7. SA37 (Skill) Analyse, model and manage socio-economic systems as complex systems by taking advantage of the opportunities offered by scenario management.

Content

CU1: System Dynamics in Production and Logistics (5 ECTS)

Review of System Thinking knowledge and competence from the 1st semester

Scenario Management

- Introduction
- Scenario techniques
- Transfer of scenarios
- Overview over main approaches for strategy development

System dynamics modelling and simulation

- Introduction, terminology, motivation for complex system thinking
- Structure and behaviour of dynamic systems - feedback as a problem
- Stocks and flows
    - Causal loop diagrams
    - Stocks, flows, and accumulation
    - Dynamics of stocks and flows
    - Modelling and simulation
        - Steps of the modelling process
        - Formulating a dynamic hypothesis
        - Formulating a simulation model
        - Validation and model testing
        - Policy design and evaluation

CU2: System implementation and ramp-up (2.5 ECTS)

Introduction

- Terminology
- Position of system implementation and ramp-up in the planning/production process
- Challenges in system implementation and ramp-up

Basics of ramp-up management

- Product development process
- Project management
- Simultaneous/concurrent engineering

Ramp-up strategy and organization

- Maturity models
- Logistics management in ramp-up
- Risk and uncertainty in logistics system implementation and ramp-up

Challenges in implementation and launching material handling, transport or logistics management and control systems

- time, budget, resource, staff and environmental constraints
- key players involved
- fast ramp-up

CU3: LSCM Project Work (2.5 ECTS)

Specification, analysis, description, classification, evaluation of strategies, current and future challenges, technical, managerial or methodological solutions, latest developments, ongoing research related to logistics processes and systems, their implementation and ramp-up, their management and control

Identification of chances and risks

Activities and Methodology

Title	Hours	ECTS	Learning Outcomes
Type: Directed			
CU1. Exercises	20	0.8	CA24, CA25, CA26, KA27, KA28, SA37
CU1. Lab sessions	30	1.2	CA24, CA25, CA26, KA27, KA28
CU1. Theory lectures	10	0.4	CA24, CA26, KA27, KA28, SA37
CU2. Exercises	15	0.6	CA24, CA25, CA26, KA27, SA36, SA37
CU2. Theory lectures	12	0.48	CA24, CA25, KA27, SA36
CU3. Seminar	22.5	0.9	CA24, SA37
CU3. Workshop	7.5	0.3	CA24, CA25, CA26, KA27, SA36, SA37
Type: Supervised			
CU1. Business Games	20	0.8	CA25, CA26, KA27, KA28, SA36, SA37
CU1. Project work	20	0.8	CA25, CA26, KA27, KA28, SA36, SA37
CU2. Case Study	18	0.72	CA25, CA26, KA27, SA37
CU3. Project work	20	0.8	CA24, CA25, SA36, SA37
Type: Autonomous			
CU1. Self-learning	20	0.8	CA24, CA25, CA26, KA27, KA28, SA36
CU2. Self-learning	20	0.8	CA24, CA25, KA27, SA36
CU3. Self-learning	10	0.4	CA24, CA25, CA26, KA28, SA36

CU1: System Dynamics in Production and Logistics (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: theory lectures. They aim to understand method, procedure, effects of dynamics in complex systems, and the role of scenario management to cope with them.
- Exercise sessions: classroom discussions. Aims to apply methods and techniques for system dynamics modelling and scenario building and evaluation
- Lab sessions: introduction to software, experimentation. Aims to get familiar with new software tools (Vensim); practice model building and simulation-based analysis of dynamic socio-economic systems
- Business game: group work, experimentation. Aims to apply elements of scenario management on a complex situation within an experimental setting, test different strategies within a supply chain simulation (The Fresh Connection)
- Project work: group work, experimentation. Aims to apply system dynamics thinking and approach; practice model-building and experimentation; demonstrate ability to systematically derive conclusions from handling complex socio-economic systems
- Autonomous work: reading, self-testing, reflecting. Retrieve and analyse information from different sources; reflect learning and problem solving processes in order to derive lessons learned.

Exercise/lab sessions, business game and project work are used for promoting students' hands-on skills.

CU2: System implementation and ramp-up (2.5 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: theory lectures. Aims to understand challenges in implementing and launching logistics systems; name and explain procedure, methods, tools for planning, managing and controlling implementation and ramp-up of logistics systems.
- Exercise sessions: classroom discussions. Aims to select and apply suitable methodologies and strategies to plan logistics system implementation and ramp-up.
- Case study: include group work, business game. Aims to apply simulation methodology to plan and test ramp-up strategies; run and manage logistics system implementation and ramp-up projects in a market setting.
- Autonomous work: reading, self-testing, reflecting. Retrieve and analyse information from different sources; reflect learning and problem solving processes in order to derive lessons learned.

CU3: LSCM Project Work (2.5 ECTS)

The course is organized in the form of a scientific workshop. Each student works independently on an individual topic searching for relevant literature (textbooks, technical journals), implementation and application reports (technical journals, websites), technical details of logistics equipment/systems (fact sheets, supplier brochures/websites). An individual mentor gives support and provides guidance in topic specification, identification of research questions, literature review and paper design. The topic can either be chosen from a given list or proposed by the student. Each student has to submit his/her topic together with a 200 words abstract to all mentors. Mentors decide about acceptance/rejection of the topic and who is going to supervise. Students prepare a scientific paper to be submitted for presentation at the workshop. The paper will be marked by the mentor; presentations/discussions will be marked by the group of mentors and by the students (peer review). Best papers are compiled within workshop proceedings for publication on the LSCM website.

The learning process will combine the following activities:

- Seminar/consultation: include classroom discussion, student presentation, coaching. Aims to identify and specify topics of relevance in logistics and supply chain management, e.g. for process and systems, their implementation and ramp-up, their management and control; present approach, structure, state-of-work; ask questions.
- Workshop: Scientific paper, student presentation. Aims to clarify topic, research questions and expected outcomes in the form of an abstract to be submitted to a scientific workshop; write a scientific workshop paper; present project results in the workshop and discuss with workshop participants.
- Project work: Literature search and review, project reporting in a scientific paper, student presentation in a scientific workshop. Aims to provide state-of-research with regard to analysis, description, classification, evaluation of strategies, challenges, methods and solutions, approaches for implementation and ramp-up, management and control; discussion about potential/risks in contributing to future development of logistics and Supply Chain Management; presentation of approach and findings in a structured way in writing and orally; experiencing formal procedure of a scientific workshop.
- Autonomous work: reading, self-testing, reflecting. Retrieve and analyse information from different sources; reflect learning and problem solving processes in order to derive lessons learned.

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.

Assessment

Continous Assessment Activities

Title	Weighting	Hours	ECTS	Learning Outcomes

CU1. Case study	6.25%	1	0.04	CA24, CA25, SA36, SA37
CU1. Final exam	12.5%	1	0.04	KA27, KA28, SA37
CU1. Project work	31.25%	1	0.04	CA24, CA25, CA26, KA27, KA28, SA36, SA37
CU2. Mid-term exam	12.5%	2	0.08	CA24, SA36, SA37
CU2. Practical assignment	12.5%	0	0	CA24, CA25, CA26, SA36, SA37
CU3. Project work	25%	0	0	CA24, CA25, CA26, KA27

CU1: System Dynamics in Production and Logistics (5 ECTS)

The final mark of this course will be calculated from the assessment of following evaluation activities:

- Case study. Student teams play six rounds of The Fresh Connection business game recording their situation analysis, intended changes, decisions made, and outcomes achieved in a logbook according to a given structure. The logbook and the final result achieved in the business game are graded.
- Project work. Student teams analyse and model The Fresh Connection company as a complex socio-economic system for a given scenario and run simulation-based evaluation of system behaviour, control levers and risk factors. Simulation experiments are documented in a simulation logbook. Model building, experimentation, results and conclusions are presented and graded.
- Final exam. Each student individually undergoes an oral exam addressing theoretical and methodological questions in the context of the semester.

CU2: System implementation and ramp-up (2.5 ECTS)

The final mark of this course will be calculated from the assessment of following evaluation activities:

- Mid-term exam. Theoretical questions on topics addressed throughout the semester in order to present generic understanding on system implementation and ramp-up in correspondence to learning objectives.
- Case study: Practical assessment of project work and problem-solving expertise based on lecturer and peer assessment.

CU3: LSCM Project Work (2.5 ECTS)

The final mark of this course will be calculated from the assessment of following evaluation activity:

- Project work. The topic can either be chosen from a given list or proposed by the student. Eachstudent has to submit his/her topic together with a 200 words abstract to all mentors. Mentors decide about acceptance/rejection of the topic and who is going to supervise. Student reports (scientific papers) will be marked by the mentor; presentations/discussions will be marked by the group of mentors and by the students (peer assessment).

CU1, CU2 and CU3

The mid-term exam (CU2) is comprised of theoretical questions and small cases on topics addressed throughout the semester in order to present generic understanding on system implementation and ramp-up in correspondence to learning objectives.

The student passes the module if case studies, projects and the mid-term 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 the case study reports/presentations or scientific paper 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 case study is failed, the student will either be provided with a new case study or asked to re-submit its report according to the corrections/indications provided by the professor. The same applies to project work resulting in a scientific paper.

Students who fail the mid-term 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 case studies, project report, scientific paper and any presentation activities related to them are announced when giving case studies or project work to students. Specific examination dates are published on the university's website.

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

Bibliography

To be provided during the lecturing period.

Software

Vensim (System Dynamics simulation software)

The Fresh Connection (web-based Supply Chain Management business game)

Language list

Information on the teaching languages can be checked on the CONTENTS section of the guide.