Bachelorseminar “Supply Chain Management” (LV 14271.0003)

Course Description

To determine whether a supply chain system will perform a required task, a manager must closely analyze it. In most cases, managers work with a model to study the system. Because physical or analytical models can be expensive and time-consuming or simply not accessible, practitioners often rely on simulation as an alternative. Simulation enables decision-makers to test potential system design and evaluate system-related decisions before implementation.

Simulation is a helpful tool for any system that changes with time, such as a queue where customers randomly arrive. Some examples of essential performance measures are the average time a customer spends in the queue or the probability that an arriving customer must wait for service. Analytically determining these values is only possible for simple systems. For real-world problems, simulation can be used to evaluate these measures for different setups. For example, one can generate the following insight from a simulation model: *the customer waiting times can be reduced by introducing an additional server or decreasing the service times*.

This course aims to familiarize students with (1) the core concepts in discrete event simulation within a supply chain management context and (2) scientific writing and presentation. The students will learn how to model, set up, execute, and evaluate simulation models. Furthermore, the students will be introduced to an exemplary supply chain application for discrete event simulation. With this example, students will be able to apply the knowledge gained from the course to solve a real-life supply chain simulation project. Finally, the students will be taught how to summarize their findings in a scientific report and present their key results to an audience.

Course Administration

Class Times
See Course Agenda (Page 3)

Faculty
Sabrina Bonzelet
Telephone: +49 221 470-2976
Email: sabrina.bonzelet@uni-koeln.de

Secretary
Stephanie Rauscher
Telephone: +49 221 470-7935
Email: stephanie.rauscher@uni-koeln.de

Project
There will be a simulation project to be worked on in groups. The project consists of three parts (details provided on the first day of class).

(1) Simulation model on a supply chain system
(2) Video presentation of project findings
(3) Written scientific report on project findings

Assignments
There will be three homework assignments. These will not be graded. You can collect up to 3 bonus points for handing in homework assignments.

Deadlines
Registration deadline for the examination: **Tuesday, April 04, 2022 at 11:59 PM via KLIPS.**

Simulation model and video presentation: **Friday, May 20, 2022 at 11:59 AM via ILIAS.**

Project report (“exam date”): **Friday, May 27, 2022 at 11:59 AM via ILIAS**

DRAFT

	Late submissions will not be accepted.
Handouts	Class handouts summarizing the main points covered for each session are provided. The handouts will typically be available for download via ILIAS 24 hours before class.
Grading	The final grade is based on the following components: i. Project Report (80 %) ii. Project Video Presentation (20 %) Note that the **grading will be based on individual performance.** **For more information on the course following your study curriculum, please contact the WiSo Student Service (Studienberatungszentrum)**
Language	English
Prerequisites	There are no specific prerequisites, just an interest in quantitative approaches in business administration.
Literature	Required readings will be announced during the lectures.
Software	AnyLogic (available online) and StatFit (available online)
Registration	Registration to the course is only possible via KLIPS. The number of participants is restricted.

Course Overview

Introduction to Simulation

- Theory: basics on supply chain simulation, conceptual modeling, input distribution selection, and output analysis
- Computer lab exercises: simulating a supply chain system with the AnyLogic software

Soft Skills Sessions

- Scientific writing workshops
- Presentation skills

Group Work

- Project: simulation of a real-life supply chain system including data collection & simulation model building using AnyLogic
- Video presentation on the key findings of the project
- Scientific report on the project results

DRAFT

Course Schedule

Session Locations:

- Lecture Sessions in 415 Seminarraum -1.502
- Hands-On/Programming Sessions (please bring your laptops) in 415 PC-Seminarraum 0.505
- Support Sessions (optional, per group and by appointment) in 415 room 2.401

	Monday	Tuesday	Wednesday	Thursday	Friday
	04	05	06	07	08
April 2022	**Introduction to Simulation** 08:00 to 09:30	**AnyLogic Hands-On 1** 08:00 to 09:30			**HW 1 Due (Friday, 11:55 pm)**
	11	12	13	14	15
	AnyLogic Hands-On 2 08:00 to 09:30			**Input Analysis** 08:00 to 09:30	**HW 2 Due (Friday, 11:55 pm)**
	18	19	20	21	22
	National Holiday		**HW 3 Due (Wednesday, 11:55 pm)**	**Building a full simulation model** 08:00 to 09:30	
	25	26	27	28	29
	Output Analysis & Feedback on Modeling Idea 08:00 to 09:30				
May 2022	02	03	04	05	06
	Support Session 1 (9:00 to 12:00)				
	09	10	11	12	13
	Support Session 2 (9:00 to 12:00)			**Workshop: Presentation Skills** 08:00 to 09:30	
	16	17	18	19	20
					Video Presentations & Simulation Models Submission **Due at 11:59 am (noon)**
	23	24	25	26	27
				National Holiday	**Project Reports Submission** **Due at 11:59 am (noon)**

DRAFT