Logistics Information Systems (Non-IE)

Offered by: Department of Industrial Engineering and Innovation Science
Language: English
Primarily interesting for: All non-IE students interested in logistic decision making, simulation and analytics
Not allowed for: Major Industrial Engineering
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Content and composition

Information systems are the primary enabler of digital transformation in business. Organizations increasingly depend on their information systems to align internal organization structures and deal with the complexity and changeability of markets. As overseeing operations becomes too complicated for humans, business requirements related to information systems are growing exponentially. Up-to-date, complete and accurate information from big data has become a necessity to survive in an increasingly competitive world. Rapid developments in information technology enable application types unimaginable a few years ago. Increasing complexity and dependence on information systems are driving significant changes across many sectors, from logistics, mobility services and hi-tech manufacturing to healthcare.

In this elective package, you study principles of logistic systems and their quantitative analysis. In particular, inventory management and production planning systems are discussed in Production & Inventory Control. In Business Process Simulation, you analyze logistic systems quantitatively by using process simulation as a technique. Analysis of such systems can also be done based on data, which is discussed in Business Analytics & Decision Support. In all courses, the analysis is used to determine the optimal decisions for improving the logistic processes.

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Course description

Fundamentals of Business Information Systems (1BV00)
Modern organizations need business information systems to support their internal operations and their interactions with external parties (suppliers, customers, competitors, government, etc). As such, basic knowledge on the concepts of business information system development and management is essential. Business processes and information systems are interwoven: changing a business process results in changing the information systems supporting it and vice versa. It is therefore also important that students -as future practitioners- are able to model the complex relation between business processes and information systems. In this relation, data and process models play a key role. A data model specifies which data of the business process the supporting information systems should collect, store and manipulate. A process model specifies the steps in the business process and their interdependencies that have to be supported by the information system. Both types of model can be used to
develop or configure information systems that support business processes. In this course, students also learn how programming statements can be specified to query, manipulate, define, and (access) control business data.

**Business Process Simulation (1BK20)**

Business Process Simulation is a tool for analyzing the performance of a business process and the impact of certain changes to these processes. Simulation is used when analytical techniques such as queuing theory or a direct experiment in practice cannot be used. A model of the business process is built and executed in a simulation tool in order to get insights in the performance indicators and bottlenecks in the process. Based on this information ideas for redesigning the process (to make it more efficient) can be generated or checked for their impact. In this course, you work in a group on a simulation project for a realistic case. You will apply a simulation methodology to arrive at recommendations for improvement and redesign of the business processes.

**Business Analytics & Decision Support (1BVK00)**

Agile organizations can gain competitive advantage through timely, thorough and relevant analysis of their (past) performance data. Coupling the results of this analysis to operational and management decisions leads to operational excellence. In this course, students learn about advanced methods of data analysis and information processing, as well as their link to decision making models. Both individual and group decision making is discussed.