

Thesis Topics

I occasionally receive requests from students looking for a topic for a thesis (bachelor's or master's). Often, they already have practical experience and data from a company—they just aren't quite sure what to do with it.

For these cases, I have compiled a list of “general topics” here. This means that the topics, as listed here, are not immediately usable for you. They still need to be tailored to your specific situation!

To get an idea of the types of theses I have supervised so far, please take a look at the list of theses published on my website.

ATTENTION: I am totally opposed to the development and use of any application of artificial intelligence and will not support any initiatives in this direction! The use of artificial intelligence in any form is prohibited when writing the thesis.

1 Specification

Topic	1.1 Business Process Analysis in a Transportation Company
Explanation	Mapping of business processes and data flows using structured methods of system analysis—suggestions for their optimization, if applicable
Student Prerequisites	<ul style="list-style-type: none"> • Contact with a suitable company • Opportunity to conduct employee surveys within this company
Support from A*	<ul style="list-style-type: none"> • Assistance with familiarization with system analysis methods • Assistance with evaluating and presenting the results

Topic	1.2 Object-oriented system analysis with UML (“Unified Modeling Language”)
Explanation	Using a self-selected example from the transportation industry, business processes are to be represented using UML—suggestions for their optimization, if applicable
Student prerequisites	<ul style="list-style-type: none"> • Basic knowledge of structured analysis methods (SA, ER) • Contact with a suitable company • Opportunity to conduct employee surveys within this company • In-depth knowledge of the relevant operational processes
Support from A*	<ul style="list-style-type: none"> • Assistance with getting started with UML • Assistance with getting started with a corresponding software tool • There is a book on this topic: W. Czuchra, “UML in Logistical Processes,” ISBN 978-3-8348-0796-0

Topic	1.3 Development of a data model for a business application
Explanation	Based on company data and employee surveys, a data model is to be created from which a business application could be developed

	(NOT required in the thesis)
Student Prerequisites	<ul style="list-style-type: none"> • Thorough knowledge of the ER method • Contact with a suitable company • Opportunity to conduct employee surveys at this company • In-depth knowledge of the relevant business processes
Support from A*	<ul style="list-style-type: none"> • Assistance in expanding ER knowledge • Help with getting started with a relevant software tool (DataArchitect) • My book "Don't Be Afraid of Microsoft Access!"

2 Information Technology

Topic	2.1 IT on board ships
Explanation	Using an example of your choice, describe and critically discuss the IT infrastructure (hardware and software) on board ships and its use—current status / future trends
Student Prerequisites	<ul style="list-style-type: none"> • Interest in technology • In-depth knowledge of onboard IT infrastructure • In-depth knowledge of relevant onboard processes
Support from A*	<ul style="list-style-type: none"> • Assistance with the analysis of the IT infrastructure and its structured presentation

Topic	2.2 Information and Communication Infrastructure in a Transportation Company
Explanation	Using an example of your choice, describe and critically discuss the information and communication infrastructure in a transportation company as well as its use – current status / future trends
Student prerequisites	<ul style="list-style-type: none"> • Interest in technology • In-depth knowledge of IT infrastructure in companies • In-depth knowledge of relevant business processes
Support from A*	<ul style="list-style-type: none"> • Assistance with analyzing the IT infrastructure and presenting it in a structured manner

3 Communication

Topic	3.1 Technologies and applications in land-to-ship communication
Explanation	Using an example of your choice, the technology of land-to-ship communication and its application should be presented and critically discussed – current status / future trends
Student Prerequisites	<ul style="list-style-type: none"> • In-depth knowledge of the communication infrastructure on board

	<ul style="list-style-type: none"> • In-depth knowledge of relevant onboard processes
Support from A*	<ul style="list-style-type: none"> • Assistance with the analysis of the communication infrastructure and its structured presentation

4 System Development

Topic	4.1 Example of the development of an IT application system
Explanation	Using MS Access, a database and an associated user interface are to be developed for a limited scope of tasks (e.g., “order processing”).
Student Prerequisites	<ul style="list-style-type: none"> • Basic knowledge of MS Access • Basic knowledge of VBA • In-depth knowledge of the business processes to be implemented in the application
Support from A*	<ul style="list-style-type: none"> • Assistance with learning data modeling (entity-relationship method) • Assistance with getting started with MS Access and VBA

Topic	4.2 Exemplary development of an IT application system
Explanation	Using MS Excel, an application is to be developed for a limited scope of tasks.
Student prerequisites	<ul style="list-style-type: none"> • Advanced knowledge of MS Excel • Basic knowledge of VBA • In-depth knowledge of the business processes to be implemented in the application
Support from A*	<ul style="list-style-type: none"> • Assistance with getting started in VBA

Topic	4.3 Simulation of transport processes
Explanation	Using an example of your choice, transport processes are to be simulated with the help of a simulation tool. The simulation results are to be critically evaluated.
Prerequisites for the student	<ul style="list-style-type: none"> • In-depth knowledge of relevant operational processes • Basic knowledge of simulation
Support from A*	<ul style="list-style-type: none"> • Assistance with getting started with a simulation tool—unfortunately, I don’t have or know how to use one :-(

5 eCommerce

Topic	5.1 e-commerce in the transportation industry
Explanation	Technical and organizational fundamentals of eCommerce, current applications, and future trends, with a special focus on mobile appli-

	cations
Student Prerequisites	<ul style="list-style-type: none"> • Interest in technology • In-depth knowledge of relevant operational processes
Support from A*	<ul style="list-style-type: none"> • Discussion partner in identifying and working on the assignment

Topic	5.2 Technologies and applications for electronic payments
Explanation	Presentation of the current state of the art in electronic payments and conceptualization of a concrete example from the transportation industry
Student prerequisites	<ul style="list-style-type: none"> • Basic knowledge of e-commerce • In-depth knowledge of relevant business processes
Support from A*	<ul style="list-style-type: none"> • Discussion partner to help identify and work on the assignment

Topic	5.3 Designing a website for a company in the transportation industry
Explanation	<p>Compilation of the possible elements of a website for a specific type of company (e.g., shipping agency) and, if applicable, (model-based!) development of the required HTML pages.</p> <p>The target concept should be structured like a checklist or a specification document. Imagine a shipping company wants to revamp and improve its website. Your work should then serve as a kind of guideline that they can follow.</p> <p>The shipping company should then work through the points you have listed or answer the questions you have posed and subsequently decide what needs to be presented on the website and how.</p> <p>e.g.</p> <ul style="list-style-type: none"> - How should the navigation be structured? - What passive content (text, images, etc.) is necessary? - What interactive content (inquiry form, online booking, etc.) is necessary? - How does this depend on the customer base? - How and how often does the content need to be updated? - What security measures need to be implemented? - ... etc., etc., etc.
Requirements for students	<ul style="list-style-type: none"> • Knowledge of marketing • Basic knowledge of HTML • In-depth knowledge of business processes in the selected type of company
Support from A*	<ul style="list-style-type: none"> • Discussion partner to help identify and work on the assignment

6 Data security

Topic	6.1 Technologies and applications for ensuring data security
Explanation	Using a self-selected example from a company in the transportation industry, the issue of data security should be presented and potential solutions critically discussed—current solutions / future trends
Student Prerequisites	<ul style="list-style-type: none"> • Basic knowledge in the selected area of data security • in-depth knowledge of relevant business processes
Support from A*	<ul style="list-style-type: none"> • Discussion partner in identifying and addressing the task

7 IT Management

Topic	7.1 The Software Life Cycle
Explanation	<p>The operational software life cycle should be illustrated using an example of your choice: requirements definition, feasibility study, requirements specification, market analysis, development or purchase decision, implementation, operation, maintenance</p> <p>In particular, the specific problems and possible solutions in the individual phases should be addressed.</p>
Student Prerequisites	<ul style="list-style-type: none"> • Basic knowledge of the software life cycle • In-depth knowledge of relevant business processes
Support from A*	<ul style="list-style-type: none"> • Assistance with in-depth familiarization with the various phases of the software life cycle

8 Other IT-related topics

Topic	8.1 Conducting web research on a topic of your choice
Description	Presentation and critical assessment of the current state of research possibilities on the web, selection of a research strategy, conducting the research, and structured presentation and critical evaluation of the results
Student Prerequisites	<ul style="list-style-type: none"> • Basic knowledge of web-based research options • Basic knowledge of the chosen topic
Support from A*	<ul style="list-style-type: none"> • Discussion partner for identifying and working on the assignment

9 General teaching on

Topic	9.1 Creation of case studies
Explanation	<p>Collection or generation of data on operational processes (especially transportation / logistics)</p> <p>Analysis of this data (preferably using MS Excel—but also using MS Access if necessary)</p>

Student requirements	<ul style="list-style-type: none">• Advanced skills in MS Excel• Basic knowledge of MS Access
Support from A*	<ul style="list-style-type: none">• Suggested topics• Assistance with any necessary VBA programming