



SYLLABUS

COURSE BLOCK A Production Management & Supply Chain Management (focusing on the German automotive industry)

**40 contact hours (plus related field trips)
3 credits**

LECTURER

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OVERVIEW

The automotive industry is the leading sector for production and logistics processes and innovations. The German automotive industry is one of the leading industries worldwide in this field. After completing the course, students will have an idea about the mindset, the problems, and the tasks of production and logistics management in the automotive industry, and discover trade-offs like those between product design, custom orientation, logistics, and production. Thus that experience will enable them not only to focus their attention on broadening their knowledge of pure engineering, design, or development, but will also enable them to perceive and understand the dependencies and effects of their engineering work on other functions. Students discuss specific tasks and problems concerning production and supply chain management and learn how to use well-chosen methods to solve related tasks and to prevent related problems. Students will gain a deeper understanding in management tasks and skills in a technical environment, consider how the dilemma and polylemma have to be balanced, and speculate on the optimization of production systems. Included in the overall program are visits to production plants such as Mercedes-Benz, Audi, Porsche, and BMW as well as to institutions as the European Patent Office, or technology-oriented museums as the German Museum in Munich.

Thus students are able to deal with problems and tasks and have the ability and knowledge to act with self-assurance in production and supply chain environments.

PREREQUISITES

LEARNING OBJECTIVES

By the end of the course students ...

- understand production management processes as well as methods used
 - deal with the mindset and the specific problems of production planning and production management
 - are able to differentiate between strategic, planning, or operative tasks in production planning
 - are able to perform miscellaneous planning methods within production management autonomously (such as assembly line balancing or layout optimization)
 - are able to optimize a production system
 - will experience how to purposefully implement a team decision in a pressure situation. Thereby the students learn to interpret situations from varying viewpoints and as a result gain the ability to use the acquired instruments for objective conflict resolution
 - are able to deal with problems and tasks and have the ability and knowledge to act with self-assurance in production environments
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- know the objectives, functions and tasks of logistics
 - know the meaning of logistics for an increase in a company's value
 - deal with the specific mindset and problems of logistics
 - recognize the advantages of holistic optimization as opposed to individual optimization
 - are familiar with a choice of essential and specific instruments, methods and processes in production logistics
 - orientate themselves in a logistics context (especially production logistics) and have broad knowledge to reflect and develop plans within logistics (such as implementation of material provision, planning of material requisitions, definition of production control processes)
 - are able to deal with supply chain management planning problems and tasks and are able to create value in a company context with the expert knowledge and mindset acquired

COURSE TOPICS

Production Management

- Production Management - Basics
- Production Management - Strategy
- Production Management - Process and layout design
- Production Management - Production planning and control system (PPS)
- Production Management - Time management
- Production Management - Lean production

Supply Chain Management

- Material Management - Introduction
- Material Management - A topic medley
- Supply Chain Management - Basics
- Supply Chain Management - Strategy
- Supply Chain Management - Overall coordination

TEACHING AND LEARNING APPROACH

The teaching and learning concept is divided into **three phases**.

In **Phase I** the students have to work through chosen passages of given lecture notes and have the opportunity to broaden their knowledge by reading recommended literature. This previously-gained knowledge will aid the students when they attend the lecture.

In **Phase II** the knowledge from Phase I will be illustrated and rounded off in lectures and also broadened with background knowledge by means of sample calculations, tasks, application examples and question and answers.

In related field trips (**Phase III**) students are able to see, smell, and feel the theoretically learned context and broaden their knowledge in a practical manner.

The continuous reflection of the learned topics and the review of the given mindset are indispensable for the successful learning process as well as continuous working on the exercises and collaboration. At the same time using that approach will mean that the exam preparation effort is minimized and spread over the program. Therefore active collaboration in the lessons is a crucial part of the teaching and learning concept.

The students have to optimize their own production system using the criteria of efficiency and customer orientation within a team-oriented and several hours long business game (in groups of about 8 students).

Thereby the system will be optimized iteratively through the following course of action:

1. Operating the given system
2. Identification of system features (including key figures)
3. Discussion on the lessons learned and the pros and cons
4. Optimization of the given system
5. Operating of the new system

The students learn the advantages of a flow production and instruments to optimize a production system. In addition they gain experience in solving problems in a pressure situation in group working towards a specific goal.

The lecturer is always available within all phases of the course as a dialogue partner to give support and suggestions. Furthermore communication takes place in personal conversations or via e-mail.

COURSE MATERIAL

Lecture notes and recommended literature.

FINAL EXAMINATION

There will be a 60-minute written closed book exam on Production Management and Supply Chain Management.

Students will be prepared throughout the course on the relevant topics. The exam will be based on the topics discussed in class. Topics that have not been discussed in class although they can be found in the lecture notes are not relevant for the exam, ditto additional information that was given in the related field trips. On the other side topics that were discussed in class although they cannot be found in the lecture notes are relevant.

Students who attend the course will be well-prepared for the examination. Regular feedback and correction will be provided to encourage improvement in their written and oral communication skills.

GRADING

Students will be graded on a scale of
A = excellent, B = good, C = average, D = below average, F = fail.

PLANNED SCHEDULE

	Contact hours	Content
Session 1	1-5	<ul style="list-style-type: none"> • Production Management - Basics • Production Management - Strategy
Session 2	6-9	<ul style="list-style-type: none"> • Production Management - Process and layout design
Session 3	10-13	<ul style="list-style-type: none"> • Production Management - Production planning and control system (PPS) • Production Management - Time management
Session 4	14-17	<ul style="list-style-type: none"> • Production Management - Lean production
Session 5	18-21	<ul style="list-style-type: none"> • Material Management - Introduction
Session 6	22-25	<ul style="list-style-type: none"> • Material Management - A topic medley
Session 7	26-28	<ul style="list-style-type: none"> • Material Management - A topic medley
Session 8	29-32	<ul style="list-style-type: none"> • Supply Chain Management - Basics
Session 9	33-36	<ul style="list-style-type: none"> • Supply Chain Management - Strategy
Session 10	37-40	<ul style="list-style-type: none"> • Supply Chain Management - Overall coordination

TEACHING PHILOSOPHY

My aim is to establish a fundamental comprehension for the typical topics in production management and supply chain management. That should enable you to have an overview referring to planning activities that are inside and across functions and process borders in order to pursue the overall optimum instead of a suboptimal individual optimum.

Therefore I want to encourage you to take a holistic view, which may be a competitive advantage towards business partners and competitors.

Moreover you should gain knowledge about important production and logistical models, instruments, methods and processes so you feel confident in a production and logistics environment and may convince your partners with your expert knowledge.

I will try to achieve that with different modules:

1. At first, I will try to impart a mindset that will help you to analyze practical production and logistic problems successfully. Thereby I will present generally applicable principles of management and configuration of this context which will help you to solve tasks.
2. Specific methods, instruments and processes will be communicated on this basis.
3. To consolidate your theoretical knowledge, there will be excursions to production facilities where you can see learned and still to be learned topics in real life.

Comprehension questions and comments with a contribution to the learning effect to all students are always welcome and should be raised immediately. The purpose is that you complete the course successfully. Nevertheless you have to do the essential part of the work and hence your success is down to your own personal responsibility.

I appreciate a substantial exchange between me and the students, because the fellow students may have valuable contributions to the comprehension of any problems or questions which may arise.

Being able to follow the arguments, collaborating, solving exercises autonomously and also participating in the discussions on questions which arise within the lectures are fundamental for a clearer understanding of the subject matter.

Large class sizes comprising of foreign students imply a risk of a high noise level, which could have a strong negative influence on work climate, knowledge acquisition and collaboration. A high noise level is predominantly caused by a few group members. These 'troublemakers' hinder the other ones from being able to concentrate and therefore won't be tolerated and will be ejected from the class.