

Syllabus  
**BAE2531 Operations Management 1**  
Prof. Dr. Ansgar Kühn  
Summer Semester 2022

|                              |  |  |
|------------------------------|--|--|
| <b>Level</b>                 | Bachelor   |  |
| <b>Credits</b>               | 2  |  |
| <b>Student Contact Hours</b> | 1  |  |
| <b>Workload</b>              | 60 hours   |  |
| <b>Prerequisites</b>         | At least 50 ECTS from section 1 of the study program |  |
| <b>Time</b>                  | s. LSF   |  |
| <b>Room</b>                  | s. LSF   |  |
| <b>Start Date</b>            | s. LSF   |  |
| <b>Lecturer(s)</b>           | <b>Name</b>  | Prof. Dr. Ansgar Kühn  |
|                              | <b>Office</b>  | T1.5.23  |
|                              | <b>Virtual Office</b>                                | <a href="#">Virtual Office of Prof. Kühn</a>                                   |
|                              | <b>Office Hours</b>                                  | Wednesday, 09:45 – 11:15   |
|                              | <b>Phone</b>   | (07231) 28-6490  |
|                              | <b>Email</b>   | <a href="mailto:Ansgar.kuehn@hs-pforzheim.de">Ansgar.kuehn@hs-pforzheim.de</a> |

## Summary

In this course the principles of strategic, tactic and operative operations/production management will be imparted. Exercises for the particular management levels will round off the lecture. The students will learn the theoretical fundamentals and use them in practical exercises and in a business game. The class covers topics from fundamental key figures to production area optimization.

## Outline of the Course

- Basics
- Strategy process
- Supply network design
- Capacity planning
- Process and layout design
- Production planning and control system (PPS)
- Material Requirements Planning (MRP)
- Time management

## Course Intended Learning Outcomes and their Contribution to Program Intended Learning Outcomes / Program Goals

| Program Intended Learning Outcomes   | Course Intended Learning Outcomes   |
|--|---|
| After completion of the program the students will be able...   | After completion of the course the students will be able...                                 |
| <b>1 Expert Knowledge</b>  |   |
| 1.1 ...to demonstrate their solid key knowledge in Technical Basics.                                 | ...to understand the basics of production organization and production processes.            |
| 1.2 ...to demonstrate their solid key knowledge in Mechanical Engineering.                           | ...to understand the basics of production organization and production processes.            |
| 1.3 ...to demonstrate their distinguished and sound competencies in General Business Administration. | ...apply business fundamentals of production management, but also strategy, direct costing. |
| 1.5 ...to demonstrate their solid key knowledge in Mathematics.                                      | ...to accompanying calculations - usually linear systems of equations, NPV to solve.        |
| <b>2 Digital Skills</b>  |   |
| <b>4 Ethical Awareness</b>   |   |
| <b>5 Communication and Collaboration Skills</b>  |   |
| <b>6 Internationalization</b>  |   |

## 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. With this previously-gained knowledge the students 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.

Following on from Phase II (usually on the same day) in Phase III the students work on exercises as group work or as individual performance. In this context the acquired knowledge, methods and principles from the lectures in phase I and II, will be used in a complex, realistic but manageable issue and thereby strengthened. After task assignment the students solve these practical cases independently by applying the acquired theory. The students are encouraged to find solutions autonomously but after a certain time period they will be directed in their solution process in one-on-one conversations with the lecturer. The next step is to solve the task in the audience and to discuss the learning targets and purpose of the task collectively. Large groups will be divided in order to maintain the quality of the lessons.

The continuous reflection of the learned topics and the review of the given mind set are also indispensable for the successful learning process as continuous working on the exercises and collaboration. At the same time with that approach the exam preparation effort is minimized and spread over the semester. Therefore an active collaboration in the lessons is a crucial part of the teaching and learning concept.

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

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

1. Operating the given system
2. Identification of system features (including key figures)
3. Discussion about 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. As well they gain experience in solving problems under pressure situation, group purposefully and target oriented.

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

## Literature and Course Materials

N/A

## Assessment

Exam (module exam 60 min.)

## Schedule

|    | Operations Management 1<br>Laboratory<br>Room: see LSF | Operations Management 2<br>(Lecture)<br>Room: see LSF | Operations Management 1<br>Room: see LSF     |
|----|--|---|--|
|    | 9:45 am - 11:15 am                                     | 11:30 am - 1:00 pm                                    | 1:45 pm - 3:15 pm                            |
| 1  | No lecture   | No lecture  | No lecture                                   |
| 2  | Buffer   | Basics 1  | Basics 1                                     |
| 3  | Buffer   | Basics 2  | Basics 2                                     |
| 4  | Buffer   | Production Strategy                                   | ---  |
| 5  | Buffer   | Supply Network Design 1                               | Supply Network Design 1                      |
| 6  | Buffer   | Supply Network Design 2                               | Supply Network Design 2                      |
| 7  | Buffer   | Process & Layout Design 1                             | Process & Layout Design 2                    |
| 8  | Buffer   | Process & Layout Design 3                             | Process & Layout Design                      |
| 9  | Buffer   | Production Planning and Control System (PPS)          | Production Planning and Control System (PPS) |
| 10 | Buffer   | Time Management                                       | Time Management                              |
| 11 | OM1 Laboratory (Group 1)                               |   |  |
| 12 | OM1 Laboratory (Group 2)                               |   |  |
| 13 | OM1 Laboratory (Buffer)                                |   |  |
| 14 | Buffer   | Calculation of old exams                              | Calculation of old exams                     |

## Academic Integrity and Student Responsibility

The lecturer appreciates a substantial exchange between the students, because the fellow students may have valuable contributions to the comprehension of occurring problems or questions.

Exercises and lectures form a whole. As a result of this, coherences will be analyzed from different points of view in order to create a broader understanding about the topic. Therefore active thinking and collaboration in the lecture and also autonomous exercise solving is fundamental for a clearer understanding of the subject matter.

The 'production business game' is run on the basis of teamwork. Thus all group members must acknowledge the results. In case of a lack of decision conformity the differing opinions must be communicated clearly in the outcomes.

Teamwork always means that all team members have their equal contribution to the work result. 'Copycats/free riders' disrupt collaboration. Especially large class sizes and foreign languages imply a risk of a high noise level, which has a strong negative influence on the work climate, knowledge acquisition and collaboration. Predominantly a high noise level is 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.

## **Code of Conduct for Students**

- read the syllabus
- practice fair play to your fellow students
- print and read the abstracts/notes before the lecture/exercise and take a look at them
- be on time and don't leave the lectures/exercises earlier
- contribute to a pleasant atmosphere (i.e. silence)
- solve your exercises independently
- raise a question if you don't understand something
- build up your knowledge continuously

[Link to the Code of Conduct for online Teaching](#)

## **Teaching Philosophy**

My aim is to make you acquainted with operations management, where business administration and engineering come together. My goal is to ensure that you succeed in your training. Therefore I want to provide support. In the case of occurring problems or questions, feel free to contact me, for instance by e-mail. I will answer promptly and if required schedule an appointment.

Please be aware that topics presented in the lecture will be deepened during the exercises.

My aim is to establish a fundamental comprehension for the common topics in operations / production management in order that you may perform planning activities independently. Thereby you should be enabled to adapt the production management mind set in order to deal with real tasks in a production environment in a professional manner.

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.

## **Additional Information**

**Language:** English

### **Learning outcome:**

The students

- are acquainted with the processes and methods in production planning and control and can apply them
- know the importance of operational and strategic perspective in operations management as well as their mutual dependencies
- recognize the interdependences between production and logistics
- know current trends in operations management and understand logistical, organizational, technical and economic implications for the entire organisation
- know the basics of ergonomics and health and safety at work and are in a position to use them
- can apply methods of time management i.e. time tracking and predetermined time systems
- are able to look at operations holistically, master essential techniques and apply them to real tasks.

### **Information about the module:**

This course is part of BAE2530 Operations Management: