

Syllabus
BAE2521 (BW110054) Production Engineering and Manufacturing 2
Prof. Dr. Peter Saile
Winter Semester 2024/25

Level	Bachelor	
Credits	3	
Student Contact Hours	2	
Workload	90 hours	
Prerequisites	Fertigungstechnik I + II Einführung in die Konstruktionslehre Advanced English for Engineers	
Time	s. LSF	
Room	s. LSF	
Start Date	s. LSF	
Lecturer(s)	Name	Prof. Dr. Peter Saile
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	Office Hours	Tuesday 9:45-11:15 Uhr
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Summary

The course deals with the most important issues of automated industrial production, focusing on technical subjects and shop floor related issues. The main objective is to give student an overview over the most important components of automation technology and their applications.

Outline of the Course

- Trends in assembly technology
- Design for Manufacturing
- Simulation of thermodynamic processes
- Classification of assembly systems
- Structure of workpiece carriers
- Features of assembly lines
- Premises for production planning
- Manual and automated transfer systems
- Transfer devices and feeders
- Sensors in assembly technology
- Calculation of system availability
- Total Productive Maintenance

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...
1 Expert Knowledge	
1.2 ...to demonstrate their solid key knowledge in Mechanical Engineering.	...explain automated product assembly. ...explain the basics of different transfer solutions and robotics.
2 Digital Skills	
2.1 ...to know and understand relevant IT software tools used in business and their features and have a solid understanding of digital technologies.	
3 Critical Thinking and Analytical Competence	
4 Ethical Awareness	
5 Communication and Collaboration Skills	
6 Internationalization	
6.1 ...to understand and explain business challenges in an international context.	...identify international aspects of production and automation
6.2 ...to articulate themselves in a professional manner in international business.	...to Apply technical knowledge and vocabulary in the context of manufacturing and automation

Teaching and Learning Approach

The teaching and learning concept is characterized by a three-phase concept. In phase I, the student reads the relevant sections in the underlying script. The student comes to class with this prior knowledge. In this phase II, the basic knowledge from phase I is assumed. This means that not all basic knowledge is taught in the course, but is applied and deepened through explanations, application examples and exercises. Short films and exhibits are used to illustrate the individual topics. Students learn how to document technical issues by making their own sketches. In phase III, what has been taught is deepened through follow-up work. Participation in lessons is an elementary component of the teaching and learning concept.

Translated with DeepL.com (free version)

Literature and Course Materials

- Nicholas P. Sands; Ian Verhappen (2018): A Guide to the Automation Body of Knowledge, Third Edition. International Society of Automation, ISBN 978-1-941546-91-8.
- Script Production 2; Prof. Dr. Peter Saile

Assessment

There will be a 60 min written final exam for this course (together with “Produktion I”) at the end of the semester.

Grading

Students will be graded on a scale of 1 = excellent, 2 = very good, 3 = satisfactory, 4 = pass and 5 = fail.

Schedule

N/A

Academic Integrity and Student Responsibility

N/A

Teaching Philosophy

I want to contribute to your learning progress in terms of technical understanding and engineering abilities. I will try to show you the practical importance of the issues of this course. Questions – during the course or during my office hours (“Kolloquium”) – are very welcome and will be answered either in the course or individually.

Additional Information

Learning Objectives

By the end of the course students

- Will understand automated industrial production processes
- Will have an overview over the components of automation

- Will know the specific challenges of manufacturing chains
- Will know characteristic designs and components of machines and production lines