Advanced Production Technologies and Optimisation

Module code:	Workload:	Semester:
MPTO	150 h	(WiSe) Sem.
Credits:	**Duration:**	**Frequency:**
5	1 Sem.	Each winter term
Independent study:	**Class size:**	**Contact hours:**
90 h		60 h
Module-No.:	**Exam.-No.:**	**Percentage of final score:**
7911	5060	PEM: 4,16; PuM, HI: 5,55
Language of instruction:	**Vers. BPO/MPO min.:**	
english	MPO-2017	605

Type of course:

Seminaristic lecture: 2 hours per week / 30 h Practical part: 2 hours per week / 30 h

Learning outcomes/Competencies:

- Students are knowing the relations of production processes with multiple influencing factors and the problems arising by that
- Students are able to face this problems by using experimental, statistical and engineering methods
- Students are able to work out strategies to control these processes by different means

Content/subject aim:

1. Introduction

2. Processes with multiple influencing factors

- Bonding Processes (examples profile wrapping, edgebanding and others)
- Sanding Processes
- Moulding Processes

3. Process Models

4. Experiment setup

- Measuring techniques
- Determination of characteristic values
- Design of experiments
- Multiple regression

5. Optimization of the process itself

- Statistical optimization strategies
- Robust processes
- Process control strategies

Teaching methods:

lecture, project work, case studies, group work, discussions, experiments in the laboratory, excursions

Prerequisites for participation:

Basic knowledge in statistics, basic knowledge of production processes (woodworking processes would fit best)

Assessment methods / First Examinator / Second Examinator:

Oral examination, taking into account the work done and the special knowledge achieved in the project work / Prof. Riegel / M.A. Kiwitt

Requirements to get the credit points:

Passed examination of this part of the course

This module is used in the following degree program: (in semester-no.)

(WiSe) M.Sc. Produktion und Management (WP)

(WiSe) M.Sc. Production Engineering and Management (WP)

(WiSe) M.Sc. Wirtschaftsingenieur der Holzindustrie (WP)

Weight of grade for final grade:

5/90: M.Sc. Produktion und Management

5/120: M.Sc. Production Engineering and Management

5/90: M.Sc. Wirtschaftsingenieur der Holzindustrie

Responsibility for module / Teacher of the submodule:

Prof. Dr.-Ing. Adrian Riegel

Other information / literature:

- Gimpel, B.: Qualitätsgerechte Optimierung von Fertigungsprozessen. Düsseldorf: VDI, 1991.
- Dietrich, E.; Schulze, A.: Statistische Verfahren zur Maschinen- und Prozeßqualifikation. München, Wien: Hanser, 2005.
- Kleppmann, W.: Taschenbuch Versuchsplanung. München, Wien: Hanser, 2003
- Steve Borris: Total Productive Maintenance: Proven Strategies and Techniques to Keep Equipment Running at Maximum Efficiency. Mcgraw-Hill Professional, 2006.
- Taiichi Ohno: Toyota Production System – beyond large scale production. New York: Productivity Press, 1990.