Business Analytics and Optimization with Python

The decision making in digitized production systems is often supported by software implementations of optimization algorithms. The course provides an overview of scientific programming using the example of the programming language Python and optimization algorithms known the module Quantitative Methods for Digital Production Management. In particular, the following contents are covered:

- Basic programming concepts: loops, control structures, data types.
- Advanced programming concepts: Functions, use of libraries, e.g., for the generation of random numbers and the solution of linear and mixed integer problems.

Learning Goals

- After completing the module, students will be able to understand and extend existing programs of optimization algorithms as well as program new approaches for solving business optimization problems.
- The students know how functions from standard libraries can be integrated. The students are able to use sensitivity analyses to gain managerial insights regarding realistic planning problems.

General Information*

Lecturer	Prof. Dr. Justus Arne Schwarz
Course Format	Integrated lecture and exercise
Credit Points	3 ECTS
Language	English
Applicability	Electives
Exam	Midterm exams, case study
Term	Summer term
Registration	Via SPUR by April 30th, 2025

Prerequisites:

Recommended module: *Produktionsmanagement,* prior or parallel attendance of *Quantitative Methods for Digital Production Management* is crucial for successful participation.

Dates and Times

This course will be taught regularly in the summer term. In the summer term 2025 at the following times:

Lecture and exercise: Tuesday 14:00 (c.t.) - 16:00, CIP-Pool (RWL U01 rechts)

* All data are informative in nature. The module description in the module catalog is binding.

Version: 12.02.2025

Prof. Dr. Justus Arne Schwarz
Chair of Production Management
Faculty of Business, Economics, and Management Information Systems| University of Regensburg
Universitätsstraße 31 | 93053 Regensburg | Germany | Phone: +49 (0)941 943 2277 | Fax +49 (0)941 943 2828
E-mail: productionmanagement@ur.de|https://www.uni-regensburg.de/wirtschaftswissenschaften/bwl-schwarz