UNIVERSITÄT DUISBURG-ESSEN
Lehrstuhl Steuerung, Regelung
und Systemdynamik
Univ.-Prof. Dr.-Ing. Dirk Söffker

Sommersemester 2024

Course	**Qualitative Methoden der Regelungstechnik, Teil 1: Programming in Process Control Systems (2V, 1Ü)**
Zielgruppe	Studierende des ACE-Master Studierende des A+S Master Studierende im ME-Master Studierende im Hauptstudium Maschinenbau / Automatisierungstechnik Studierende im Hauptstudium Elektrotechnik / Automatisierungstechnik
URL of the course	https://moodle.uni-due.de/course/view.php?id=19652
Lecturer	Florian Diepers, M.Sc., Univ.-Prof. Dr.-Ing. Dirk Söffker
Assistant	Florian Diepers, M.Sc.
About course	In SoSe 2024, the course will be realized in presence at the university. The realization is carried out via: - Lecture and exercise material (pdf) Additional material is provided: - Lecture video material - Exercise video material The commented material is published online 3 days before the lecture/exercise date in the Moodle course and can be downloaded. Downloading the commented versions after corresponding lecture/exercise date is not possible. The basis of the course is the specified textbook (> available in the textbook collection). The central teaching material is available as encrypted PDF documents in the Moodle course. **It is not recommended to use ONLY the video documents for learning.** For each lecture unit a raw manuscript is published which can be downloaded in the Moodle course **from the beginning of the course**. This serves to structure the personal/personalizable notes. For preparation/postprocessing of the lecture it is strongly recommended ➢ **Preparation of the previous material** ➢ **as well as reading the upcoming material in the given chapters in advance (in the specified textbook/textbook).**

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Material	Moodle: Qualitative Methoden der Regelungstechnik, Teil 1: Programming in Process Control Systems – QMR1 (https://moodle.uni-due.de/course/view.php?id=19652) The password can be requested via the e-mail address srs-pw@uni-due.de. The subject must contain the word **QMR1**.
Day	Wednesday and Friday
Time	Wednesdays: 9:00 am – 1:00 pm Fridays: 8:00 am – 12:00 pm
Room	Wednesdays: MB 243 Fridays: MB 143
First course	June 5
Last course	July 12
Literature	Lehrbuchempfehlungen: K.-H John und M. Tiegelkamp: IEC61131-3: Programming Industrial Automation Systems, Springer, 2001. G. Wellenreuther und D. Zastrow: Automatisieren mit SPS – Theorie und Praxis, Vieweg Verlag, 2005. B. Vogel-Heuser und A. Wannagat: Modulares Engineering und Wiederverwendung mit CoDeSys V3, Oldenbourg Industrieverlag, München, 2009.

Content	• Overview of automated systems architecture
	• Design and function of automation systems
	• PLC programming
	  ○ Classic IEC 61131-3 Languages
	  ○ Object-oriented extension of IEC 61131-3 languages
	• Bus systems and motion control

Exam	Written exam, 90 min, closed-book, **English language**, mandatory registration at the examination office