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

Sommersemester 2022

Course	**System Dynamics (1V, 1Ü, 1P)**
Zielgruppe	**ISE (Bachelor)**
URL of the course	https://moodle.uni-due.de/course/view.php?id=19656
Lecturer	Univ.-Prof. Dr.-Ing. Söffker
Assistant	Lina Owino, M.Sc.
About course	In SoSe 2022, the course will be realized mainly in presence at the university. Two appointments (April 8, 2022 and June 3, 2022) will be realized ONLY online via Zoom https://uni-due.zoom.us/j/95321161168?pwd=V2taalh3N3dTMk1DNGc4V2paWFZUQT09 to avoid conflicts with the related online attestation for the practical exercise. The course is based on the following material (downloadable via Moodle): - Lecture and exercise material (pdf) - Lecture video material (beginning LU1) - 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 the lecture/exercise date is not possible. The basis of the course is the specified textbook (> available in the textbook collection). The central teaching materials are available as encrypted PDF documents in the Moodle course. 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/individualize the personal notes. For preparation/postprocessing of the lecture it is strongly recommended ➢ **preparation of the previous material,** ➢ **attending the consultation hours** ➢ **as well as reading the upcoming material in the given chapters in advance (in the specified textbook/textbook).**

Material	Moodle: System Dynamics – Sde (https://moodle.uni-due.de/course/view.php?id=19656) The password can be requested via the e-mail address srs-pw@uni-due.de. The subject must contain the word **SDe**.
Day	Friday
Time	1:00 – 4:00 pm
Room	MB 144
First course	April 8, 2022
Last course	June 10, 2022
Literature	Lunze, J.: Regelungstechnik 1, Springer, 3. Auflage, 2001 (available in the library) **> L** Ogata, K.: Modern Control Engineering, 4th Edition, 2002. (available in the library) **> O**
Additional Reading	Franklin, G.F.; Powell, J.D.; Emami-Naeini, A.: Feedback Control of Dynamic Systems, Prentice Hall 2002 (available in the library) Dorf, R.C.; Bishop, R.H.: Modern Control Systems, Pearson, 2005.
Content	1 Terms, Definition, Idea of Feed Back, Technical Control (L 1 – 2.10, O1 + Material) 2 Dynamic Systems, Description of dynamical systems (L 3.1-3.2,4.1; O2.3(**), O3.4(*), O3.5(*), O11.4(*) [Eq. 11-25f,11-39f]) 3 Description of linear systems (L 4.1-4.3.3; O2.3(**),O3.4(*),O3.5(*),O11.4(*)[Eq. 11-25f,11-39f]) 4 Behavior of linear systems (L 5.1.1, L 5.1.2-5.2 + Material) 5 Time behavior of elements and loops (L 5.6 + Material)
Practical Exercise	Check separate notice.
Exam	Written exam, 90 min, closed-book, mandatory registration at the examination office