Lunze, Jan
Control theory. 1: System-theoretic foundations. Analysis and design of one-loop control. 2., neubearb. Aufl. (Regelungstechnik. 1: Systemtheoretische Grundlagen, Analyse und Entwurf einschleifiger Regelungen.) (German) | Zbl 0940.93001 |
Berlin: Springer. xxi, 549 S. (1999).

[For a review of the first edition (Springer, Berlin, 1996) see Zbl 0867.93002).]

This textbook in German for engineering students, containing an introduction into the modelling and analysis of dynamic control systems, is the revised and extended 2nd edition of a former text on the same topic. The reader will find many illustrations, worked out examples and exercises with solutions given in the appendix; moreover, an introduction into the program system "MATLAB" is provided.

After an introduction into the theoretical foundations and the goals of control theory, in Chapter 2 several concrete technical and non technical control problems are given. Then, in Chapters 3-6, the structural representation of dynamic systems, the system representation in the time domain, the behavior of linear systems and the system representation in the frequency domain are described. Closed-loop systems are studied in Chapter 7, and the stability of feedback systems is examined in Chapter 8. Chapters 9-13, the last part of the textbook, contain the design of closed-loop systems. Information about further reading are given after each chapter. Concerning the mathematical prerequisites of this textbook, some basic knowledge from matrix calculus and Fourier- and Laplace-transform is needed.

The book, containing a very detailed presentation of the foundations of modelling, analysis and design of control systems, can be recommended as a textbook for classes on one-loop control, but due to the detailed explanations it is also very suitable for a self-study of this topic.

Reviewer: K.Marti (Neubiberg)

MSC:

93-01	Introductory exposition (textbooks, tutorial papers, etc.) pertaining to systems and control theory	Cited in **4** Reviews
93B51	Design techniques (robust design, computer-aided design, etc.)	

Keywords:

linear systems; frequency domain; stability of feedback systems; design; closed-loop systems

Software:

Matlab