



# Physiological Control Systems: Analysis, Simulation, and Estimation

By Michael C. K. Khoo



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Many recently improved medical diagnostic techniques and therapeutic innovations have resulted from physiological systems modeling. This comprehensive book will help undergraduate and graduate students and biomedical scientists to gain a better understanding of how the principles of control theory, systems analysis, and model identification are used in physiological regulation. Ample Simulink<sup>®</sup> and MATLAB<sup>®</sup> examples throughout the text and posted at an IEEE FTP site will provide you with a hands-on approach for exploring modeling and analysis of biological control systems.

You will learn about classical control theory and its application to physiological systems, and contemporary topics and methodologies shaping bioengineering research today. Discussions on the latest developments in system identification, optimal control, and nonlinear dynamical analysis will keep you up-to-date with recent bioengineering advances. From modeling and stability analysis to feedback control in physiological regulatory mechanisms, *Physiological Control Systems* provides an in-depth study of key bioengineering principles that is simply unmatched in the field.

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Biomedical / Electrical Engineering

Physiological Control Systems Analysis, Simulation, and Estimation

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About the Author

**Michael C. K. Khoo** is professor of biomedical engineering at the University of Southern California, Los Angeles. His current research interests include respiratory and cardiac autonomic control during sleep, biomedical signal processing, and physiological modeling. Dr. Khoo was the recipient of a National Institutes of Health Research Career Development Award from 1990 to 1996 and the American Lung Association Career Investigator Award from 1991 to 1996. He has published widely in the field of cardiorespiratory and sleep research, and is the editor of two books: *Bioengineering Approaches to Pulmonary Physiology and Medicine* (Plenum, 1996) and *Modeling and Parameter Estimation in Respiratory Control* (Plenum, 1989), in addition to over 85 journal articles, book chapters, and conference papers.

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