

1. Record Nr.	UNINA9910392745503321
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Titolo	Physiology for Engineers : Applying Engineering Methods to Physiological Systems // by Michael Chappell, Stephen Payne
Pubbl/distr/stampa	Cham : , : Springer International Publishing : , : Imprint : Springer, , 2020
ISBN	3-030-39705-X
Edizione	[2nd ed. 2020.]
Descrizione fisica	1 online resource (179 pages)
Collana	Biosystems & Biorobotics, , 2195-3570 ; ; 24
Disciplina	612.00151
Soggetti	Biomedical engineering Human physiology Bioinformatics Biomedical Engineering and Bioengineering Human Physiology Computational and Systems Biology
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di bibliografia	Includes bibliographical references.
Nota di contenuto	Cell Structure and Biochemical Reactions -- Cellular Homeostasis and Membrane Potential -- The Action Potential -- Cellular Transport and Communication -- Pharmacokinetics -- Tissue Mechanics -- Cardiovascular System I: The Heart -- Cardiovascular System II: The Vasculature -- Respiratory System -- Nervous System.
Sommario/riassunto	This book provides an introduction to qualitative and quantitative aspects of human physiology. It examines biological and physiological processes and phenomena, including a selection of mathematical models, showing how physiological problems can be mathematically formulated and studied. It also illustrates how a wide range of engineering and physics topics, such as electronics, fluid dynamics, solid mechanics and control theory can be used to describe and understand physiological processes and systems. Throughout the text, there are introductions to measuring and quantifying physiological processes using both signaling and imaging technologies. This new edition includes updated material on pathophysiology, metabolism and the TCA cycle, as well as more advanced worked examples. This book

describes the basic structure and models of cellular systems, the structure and function of the cardiovascular system, and the electrical and mechanical activity of the heart, and provides an overview of the structure and function of the respiratory and nervous systems. It also includes an introduction to the basic concepts and applications of reaction kinetics, pharmacokinetic modelling and tracer kinetics. It appeals to final year biomedical engineering undergraduates and graduates alike, as well as to practising engineers new to the fields of bioengineering or medical physics. .

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