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ISBN	9783031207846 9783031207839
Edizione	[First edition.]
Descrizione fisica	1 online resource (412 pages)
Disciplina	610.28
Soggetti	Biomedical engineering Electricity - Physiological effect Electrophysiology
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Introduction -- Part I: Electricity Within Humans -- Basic Unit of Human Electricity -- Electric Potential at Rest -- Electrical Potential at Action -- Receptor Potentials -- Conduction and Control of Electrical Potentials -- Part II: Electricity From Humans -- Electrical Signal From the Heart -- Electrical Signal From the Brain -- Electrical Signals From Other Muscles and Neurons -- Brain-Computer Interface -- Electrical Signals for Human Identification and Authentication -- Part III: Electricity Toward Humans -- Electrical Stimulation for the Heart -- Electrical Stimulation for the Brain -- Electrical Stimulation for the Hearing and Vision Disabled -- Electrical Stimulation of Nerves and Muscles -- Health-Related Effects of Electricity.
Sommario/riassunto	Humans are electric beings. We are managed, monitored, and stimulated electrically. This textbook provides students and practitioners with a solid foundation and understanding of human electricity and the work currently being done to further develop electrical signals for medical purposes and related goals. The book introduces the fundamentals of how biological systems generate electrical signals, covering a wide range of biomedical engineering topics, including bioelectricity, biomedical signals, neural engineering,

and brain-computer interface. The book is presented in three sections: Part I explains how electrical signals and impulses manage the human body; Part II examines the kinds of electrical signals in the human body and how they are monitored, controlled, and used; Part III looks at clinical use of electrical stimulation methods and how they are being developed for interventions in medicine. The textbook is designed for upper-level undergraduate and graduate courses taught in biomedical and electrical engineering and physics programs. The book is also a valuable professional reference for practicing engineers and scientists. Explains humans as electric beings who are managed, monitored, and stimulated electrically; Deals with the electricity of major human organs; Covers a wide range of biomedical engineering topics.

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