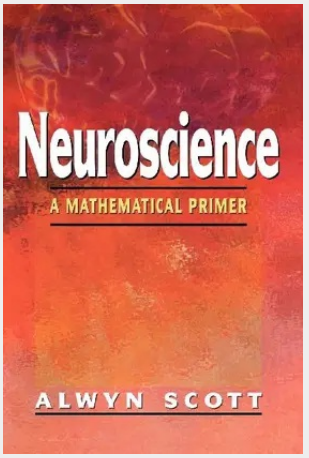
Scott

Neuroscience

A Mathematical Primer



Arguably the most intricate dynamic object in the universe, the human brain is an unsounded source of wonder for the scienti?c community. The primary aim of this book is to provide both students and established - vestigators in the growing area of neuroscience with an appreciation of the roles that mathematics may play in helping to understand this en- maticorgan.
Alongwithdiscussionsofresultsobtainedbytheneuroscience community, emphasis is placed on suggesting fruitful research problems for those planning to embark on mathematical studies in neuroscience. To make the overall perspectives understandable to philosophers and psychologists, essential features of the discussions are presented in ordinary English, with more detailed mathematical comments in appendices and footnotes. Although it attempts to maintain both clarity and biological relevance, this is not a text on the anatomy of nerve systems; thus readers should bring some knowledge of neurophysiology through other courses, associated studies, or laboratory research. It is a guiding theme throughout the book that the brain is organized into several quite di? erent levels of dynamic activity. As will be seen, these levels are hierarchically structured, beginning with the molecular dynamics ofintrinsicmembraneproteinsandproceedingupward,throughtheswit- ing properties of active membrane patches and synapses, the emergence of impulses on active ?bers, overall properties of individual neurons, and the growth of functional assemblies of interacting neurons, to the global - namics of a brain. At each level of description, reality turns di?erent facets of her mystery to us, and diverse phenomena make their contributions to the brain’s collective behavior.

Arguably the most intricate dynamic object in the universe, the human brain is an unsounded source of wonder for the scienti?c community. The primary aim of this book is to provide both students and established - vestigators in the growing area of neuroscience with an appreciation of the roles that mathematics may play in helping to understand this en- maticorgan.
Alongwithdiscussionsofresultsobtainedbytheneuroscience community, emphasis is placed on suggesting fruitful research problems for those planning to embark on mathematical studies in neuroscience. To make the overall perspectives understandable to philosophers and psychologists, essential features of the discussions are presented in ordinary English, with more detailed mathematical comments in appendices and footnotes. Although it attempts to maintain both clarity and biological relevance, this is not a text on the anatomy of nerve systems; thus readers should bring some knowledge of neurophysiology through other courses, associated studies, or laboratory research. It is a guiding theme throughout the book that the brain is organized into several quite di? erent levels of dynamic activity. As will be seen, these levels are hierarchically structured, beginning with the molecular dynamics ofintrinsicmembraneproteinsandproceedingupward,throughtheswit- ing properties of active membrane patches and synapses, the emergence of impulses on active ?bers, overall properties of individual neurons, and the growth of functional assemblies of interacting neurons, to the global - namics of a brain. At each level of description, reality turns di?erent facets of her mystery to us, and diverse phenomena make their contributions to the brain's collective behavior.

85,59 €
79,99 € (zzgl. MwSt.)

Lieferfrist: bis zu 10 Tage

Artikelnummer: 9780387954028
Medium: Buch
ISBN: 978-0-387-95402-8
Verlag: Springer
Erscheinungstermin: 19.06.2002
Sprache(n): Englisch
Auflage: 2002
Produktform: Kartoniert
Gewicht: 1160 g
Seiten: 352
Format (B x H): 155 x 235 mm

Kundenservice Verlag Dr. Otto Schmidt KG
Neumannstraße 10, 40235 Düsseldorf | kundenservice@otto-schmidt.de | 0221-93738-997 (Inland)