

An introduction to complex systems: making sense of a changing world

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Abstrak

This book explores the interdisciplinary field of complex systems theory. By the end of the book, readers will be able to understand terminology that is used in complex systems and how they are related to one another; see the patterns of complex systems in practical examples; map current topics, in a variety of fields, to complexity theory; and be able to read more advanced literature in the field. The book begins with basic systems concepts and moves on to how these simple rules can lead to complex behavior. The author then introduces non-linear systems, followed by pattern formation, and networks and information flow in systems. Later chapters cover the thermodynamics of complex systems, dynamical patterns that arise in networks, and how game theory can serve as a framework for decision making. The text is interspersed with both philosophical and quantitative arguments, and each chapter ends with questions and prompts that help readers make more connections.