



Fundamentals of Complex Networks: Models, Structures and Dynamics

By Guanrong Chen, Xiaofan Wang, Xiang Li



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Complex networks such as the Internet, WWW, transportation networks, power grids, biological neural networks, and scientific cooperation networks of all kinds provide challenges for future technological development.

- The first systematic presentation of dynamical evolving networks, with many up-to-date applications and homework projects to enhance study
- The authors are all very active and well-known in the rapidly evolving field of complex networks
- Complex networks are becoming an increasingly important area of research
- Presented in a logical, constructive style, from basic through to complex, examining algorithms, through to construct networks and research challenges of the future



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Editorial Review

From the Back Cover

This book introduces readers to the notion of complex networks including the Internet, transportation networks, power grids, biological neural networks, and scientific cooperation networks, which provide challenges for future technological development. The recent spate of collapses in power grids and ongoing virus attacks on the Internet illustrates the need for knowledge about mathematical modeling, behavioral analysis, optimized planning and performance control in such networks. For advancement of methodologies and techniques, it has become clear that more fundamental knowledge will be needed in an engineering context about how dynamical networks work and how they can be controlled.

The book is divided into two parts: Part I consists of three chapters, presenting background information and basic materials needed to learn the subject, with a variety of exercises for illustrating fundamental concepts and familiarizing related modeling and analysis techniques. Part II contains several selected application-oriented stand-alone topics.

- A systematic presentation of dynamical evolving networks, with many up-to-date applications and homework projects to enhance study
- Complex networks are becoming an increasingly important area of research and applications
- Presented in a logical and constructive style, from basic graphs through to complex networks, and exploring research challenges of the future

Fundamentals of Complex Networks: Models, Structures and Dynamics is ideal for upper-level undergraduates, postgraduates and researchers in electrical and electronic engineering, mechanical engineering, computer science, information science, social science, applied physics and applied mathematics. The book is intended to be informal, emphasizing basic ideas and methodologies with elementary and sometimes heuristic mathematical arguments, easily readable by anyone having minimal knowledge of calculus, linear algebra and ordinary differential equations.

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