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Fundamentals of Signals and Systems: A Building Block Approach

By Philip D. Cha and John I. Molinder

Cambridge University Press, Cambridge, UK, 2006. Paperback. Book Condition: New. First Edition. This innovative textbook provides a solid foundation in both signal processing and systems modeling using a building block approach. The authors show how to construct signals from fundamental building blocks (or basis functions), and demonstrate a range of powerful design and simulation techniques in Matlab, recognizing that signal data are usually received in discrete samples, regardless of whether the underlying system is discrete or continuous in nature. The book begins with key concepts such as the orthogonality principle and the discrete Fourier transform. Using the building block approach as a unifying principle, the modeling, analysis and design of electrical and mechanical systems are then covered, using various real-world examples. The design of finite impulse response filters is also described in detail. Containing many worked examples, homework exercises, and a range of Matlab laboratory exercises, this is an ideal textbook for undergraduate students of engineering, computer science, physics, and other disciplines. Contents 1. Introduction to signals and systems 2. Constructing signals from building blocks 3. Sampling and data acquisition 4. Lumped element modeling of mechanical systems 5. Lumped element modeling of electrical systems 6. Solution to differential equations 7....



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