Continuous and discrete time signals and systems / Mrinal Mandal and Amir Asif.

Abstract
This textbook presents an introduction to the fundamental concepts of continuous-time (CT) and discrete-time (DT) signals and systems, treating them separately in a pedagogical and self-contained manner. Emphasis is on the basic signal processing principles, with underlying concepts illustrated using practical examples from signal processing, multimedia communications, and bioinformatics. Following introductory chapters, the text is separated into two parts. Part I covers the theories, techniques, and applications of CT signals and systems and Part II discusses these topics for DT, so that the two can be taught independently or together. Accompanying the book is a CD-ROM containing MATLAB code, audio clips, images, interactive programs, and signal animations. With over 300 illustrations, 285 worked examples and 385 homework problems, this textbook is an ideal introduction to the subject for undergraduates in electrical and computer engineering. Further resources, including solutions for instructors, are available online at www.cambridge.org/9780521854559.
discrete-time signals and systems includes digital computers. Approximating the continuous-time differential equation as a discrete-time system enables the system to be simulated by hand and computer. In a discrete-time system, time advances in lumps. If the lump size, also known as the timestep, is $T$, then $h[n]$ is the discrete-time approximation of $h(nT)$. Mrinal Mandal is an Associate Professor at the Department of Electrical and Computer Engineering, University of Alberta, Edmonton, Canada. His main research interests include multimedia signal processing, medical image and video analysis, image and video compression, and VLSI architectures for real-time signal and image processing. Amir Asif is an Associate Professor at the Department of Computer Science and Engineering, York University, Toronto, Canada.