

DOWNLOAD PDF INTRODUCTION TO MECHATRONICS AND MEASUREMENT SYSTEMS ALCIATORE

Chapter 1 : Introduction to Mechatronics and Measurement Systems

Supplemental information for the textbook: Introduction to Mechatronics and Measurement Systems. The site includes online video demonstrations, laboratory exercises, MathCAD analysis examples, and links to related resources.

Preface xv to supplement the questions and exercises at the end of each chapter. Hints and partial answers for many of the CDIs are available on the book website at www. To enhance student learning, carefully designed laboratory exercises coordinated with the lectures should accompany a course using this text. A supplemental Laboratory Exercises Manual is available for this purpose see www. The combination of class discussion items, design examples, and laboratory exercises exposes a student to a real-world practical approach and provides a useful framework for future design work. In addition to the analysis Examples and design-oriented Design Examples that appear throughout the book, Threaded Design Examples are also included. The examples are mechatronic systems that include microcontrollers, input and output devices, sensors, actuators, support electronics, and software. The designs are presented incrementally as the pertinent material is covered throughout the chapters. This allows the student to see and appreciate how a complex design can be created with a divide-and-conquer approach. Also, the threaded designs help the student relate to and value the circuit fundamentals and system response topics presented early in the book. Shown below are the icons used, along with a description of the resources to which they point: Video Demo Indicates where an online video demonstration is available for viewing. The clips show and describe electronic components, mechatronic device and system examples, and laboratory exercise demonstrations. Indicates where a link to additional Internet resources is available on the book website. These links provide students and instructors with reliable sources of information for expanding their knowledge of certain concepts. The files can be edited to perform similar and expanded analyses. The manual provides useful hands-on laboratory exercises that help reinforce the material in the book and that allow students to apply what they learn. Resources and short video demonstrations of most of the exercises are available on the book website. For information about the Laboratory Exercises Manual, visit www. In addition, a complete password-protected Solutions Manual containing solutions to all end-of-chapter problems is available at the McGraw-Hill book website at www. These supplemental materials help students and instructors apply concepts in the text to laboratory or real-world exercises, enhancing the learning experience. Define mechatronics and appreciate its relevance to contemporary engineering design 2. Identify a mechatronic system and its primary elements 3. Define the elements of a general measurement system 1. At that time, mines needed large pumps never before seen to keep their shafts dry, iron and steel mills required pressures and temperatures beyond levels used commercially until then, transportation systems needed more than real horse power to move goods; structures began to stretch across ever wider abysses and to climb to dizzying heights, manufacturing moved from the shop bench to large factories; and to support these technical feats, people began to specialize and build bodies of knowledge that formed the beginnings of the engineering disciplines. The primary engineering disciplines of the 20th century—mechanical, electrical, civil, and chemical—retained their individual bodies of knowledge, textbooks, and professional journals because the disciplines were viewed as having mutually exclusive intellectual and professional territory. Entering students could assess their individual intellectual talents and choose one of the fields as a profession. We are now witnessing a new scientific and social revolution known as the information revolution, where engineering specialization ironically seems to be simultaneously focusing and diversifying. This contemporary revolution was spawned by the engineering development of semiconductor electronics, which has driven an information and communications explosion that is transforming human life.

Chapter 2 : Introduction to Mechatronics & Measurement Systems by David G. Alciatore

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Introduction to Mechatronics and Measurement Systems, Fifth Edition - is a multifaceted resource which is designed to serve as a text for modern instrumentation and measurements courses, hybrid electrical and mechanical engineering courses replacing traditional circuits and instrumentation courses, as well as for stand-alone mechatronics.

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INTRODUCTION TO MECHATRONICS AND MEASUREMENT SYSTEMS provides comprehensive and accessible coverage of the evolving field of mechatronics for mechanical, electrical and aerospace engineering majors. The author presents a concise review of electrical circuits, solid-state devices, digital circuits, and motors- all of which are fundamental to.

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â€¢ Mechatronics exploits systems engineering to guide the product realization process from design, model, simulate, analyze, refine, prototype, validate, and deployment cycle.