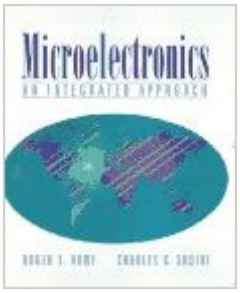
Microelectronics: An Integrated Approach



Synopsis

KEY BENEFIT: This book describes device physics and circuit design in the context of modern microelectronics integrated circuit technology. KEY TOPICS: It introduces approaches to learning the core device physics and analog/digital circuit concepts that make the subject more accessible to the current generation of students. The authors have designed a concise, concentrated presentation, limiting coverage to only those concepts necessary for the understanding of devices and circuits.

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Customer Reviews

This text describes device physics and circuit design in the context of modern microelectronics integrated circuit technology. It introduces approaches to learning the core device physics and analog/digital circuit concepts that make the subject more accessible to the current generation of students. The authors have designed a concise, concentrated presentation, limiting coverage to only those concepts necessary for the understanding of devices and circuits.

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only those concepts necessary for the understanding of devices and circuits.

This is still a a good textbook but it needs a number a additional topics to being it up to date. Well written and easy to read.

I purchased this book to go along with the MIT open courseware material that is available online. By following along with the lectures in the book and taking notes, you can get the experience of the actual class and learn quite a bit. The teachers of this class are amazing and help explain the topics covered in the text well enough to learn the material. The only problem I had with the book is just my personal preference to start off any introductory class dealing with electronics with the physics of electrons and the chemistry of molecular interaction. That way you can understand what is happening inside the copper wire before learning about integrated circuits. The book starts off with an intro to integrated circuits and computer architecture, then in chapter 2 goes on to the physics of semiconductors. So the information IS there, I just felt it was out of order but it makes some sense if you follow along with the online course. [...]along the left panel of the website you will see the links to the lectures and syllabus if interested.

Charles Sodini is a professor at MIT who teaches 6.012 (Microelectronic Circuits and Devices) and is the co-author of this book, which we use in his class.The textbook is very well organized and gives very clear examples and numerous practice and design problems to play with. The derivations are easy to follow and the diagrams are well notated and complement the text.6.012 is a one semester course at MIT covering all the topics discussed in the textbook. In addition to weekly problem sets (which are nothing more than the P problems from the textbook), the course is supplimented by a design project (similar to a design question you might find in chapter 13, but at a bigger scale), and two laboratories in device characterization (sadly, only available for MIT students). SPICE is used extensively.Someone mentioned that the problems seem like plug-and-chug, but I think the book is trying to teach you intuition so when you handle realistic problems (such as those presented in the design project questions), you have an idea of how to approach it through rough hand-calculations and then follow up with more precise measurements in SPICE.

This is one of the best books explaining the pn junction, bipolar transistors, MOS capacitor , and the MOSFET. The derivation are extremely clear and logical,and every question that you think of is

answered in the next line. This book is for someone who already have taken some course in electronics, and who really wants some solid understanding of the devices, all that without being a genious in semiconductor physics. Gauss's low, and KVL is almost all that is needed. Derivations are extremely clear, and thorough.

This is by far the best Microelectronics book I've ever read (and I have a large collection). The authors really dig deep into the material and explain every little step as you progress toward the bigger picture. I absolutely love this textbook. I recommend it to anyone who appreciates a technical read with rigorous and thorough mathematical derivations of equations that describe physical phenomena in microelectronic devices and materials.

This is the worst textbook that I have ever read. The authors make way too many assumptions in deriving their equations. Also, their approximations seem very sketchy and go without proper justification. All of these assumptions and approximations make it near impossible to understand anything, and so the student is just left with a bunch of meaningless equations. The end-of-chapter problems and excercises thus become just plug-and-chug, and they teach the student absolutely nothing about semiconductor devices. The problems are only difficult in that the student must search through the 150 or so gigantic equations in each chapter to find the correct one to plug the numbers into. No insight is gained.

This is a terrible book for beginners in electrical engineering. It makes even the simplest topics difficult to understand. The attempt of the book was to give readers a broad view of electrical engineering, about device of many kinds, but what it actually did was "scaring" students away. Absolutely the worst book for introduction to devices..... a good starting book would be something like the one written by Pierret F Robert.....

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Memory Chip Design (Springer Series in Advanced Microelectronics) (v. 5) Fundamentals of Microelectronics Fundamentals of Microelectronics, 2nd Edition RF Microelectronics (2nd Edition) (Prentice Hall Communications Engineering and Emerging Technologies Series from Ted Rappaport) PIC Microcontrollers, Third Edition: An Introduction to Microelectronics Microelectronics Circuit Analysis and Design (Int'l Ed) The Monte Carlo Method for Semiconductor Device Simulation (Computational Microelectronics) WIRE BONDING IN MICROELECTRONICS, 3/E Integrated circuit devices and components (Integrated-circuit technology, analog and logic circuit design, memory and display devices) Integrated Theory & Knowledge Development in Nursing, 8e (Chinn, Integrated Theory and Knowledge Development in Nursing) Glencoe Integrated iScience, Level Green, Grade 7, Student Edition (INTEGRATED SCIENCE) How To Approach Women: Fearless Approach, Approach Women And Life With Unstoppable Confidence (how to get a girl) Understanding and Managing Tourism Impacts: An Integrated Approach (Contemporary Geographies of Leisure, Tourism and Mobility) Clinical Social Work Practice: An Integrated Approach, Enhanced Pearson eText -- Access Card (5th Edition) Chronic Pain: An Integrated Biobehavioral Approach Stuttering: An Integrated Approach to Its Nature and Treatment Speech Science: An Integrated Approach to Theory and Clinical Practice (3rd Edition) (Allyn & Bacon Communication Sciences and Disorders) Stuttering: An Integrated Approach to Its Nature and Treatment (3rd Edition)