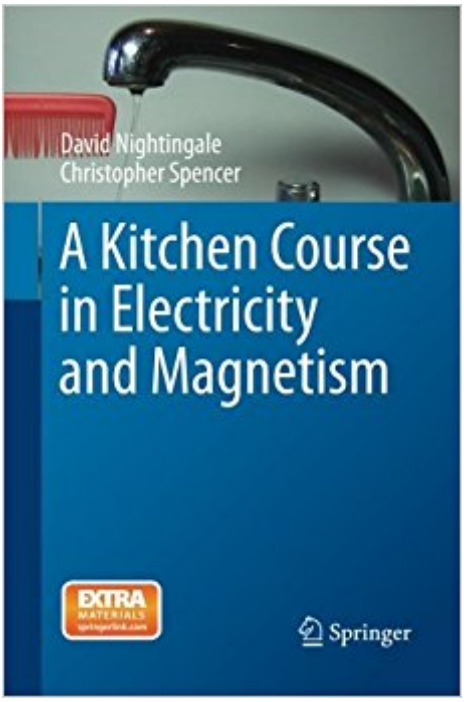
A Kitchen Course In Electricity And Magnetism



Synopsis

Electricity is all around us: cars, telephones, computers, lights -- the modern world runs entirely on electrons. But what are electrons? How do they behave? How do we control them? This book will show you how to build a battery, detect static electricity and construct a basic current meter, all using common items from your kitchen. Along the way you'll learn about the meaning of "voltage" and "current", what makes an LED work and the difference between AC and DC. The last chapter uses transistors -- the basic building blocks of every computer -- for lots of interesting experiments. With plenty of colorful illustrations, historical stories and an easy, accessible style, "A Kitchen Course in Electricity and Magnetism" will be a great start for budding and amateur scientists who want to learn more about how the world works.

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Customer Reviews

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J. David Nightingale has taught physics for over 30 years at SUNY New Paltz.Ã Â More recently he has been a regular essayist for Northeast Public Radio, authoring many essays on famous scientists from history.Ã Â Prof. Nightingale has previously co-authored the Springer book "A Short Course in General Relativity", now in its third edition.

I purchased this book roughly a year ago. I have been tutoring for about 8 years and find this book to be very helpful for conveying knowledge to my students. It provides many easy experiments and examples of Physics within everyday life. I find that when I can pique the interest of my students with ÃƒÂ¢Ã â ¬Ã Å“happeningsÃƒÂ¢Ã â ¬Ã Â• in their immediate surroundings; it gives them a whole new meaning to Physics and life. Most kids are bored and/or scared because they canÃƒÂ¢Ã â ¬Ã â„¢t relate to my favorite subject.Demonstrations I use when going to a home with no science equipment: Static Electricity: The comb and small stream of water from a faucet (P. 9) Magnetic fields: A hacksaw blade, magnet and string (p. 81)I can easily carry small items I need in my briefcase and use math to explain what they just saw.There are videos located on the internet.I recently bought 2 more books to hand out to relatives.This little crutch should be in the briefcase of every Physics teacher and tutor for every level!

This book really lives up to its name. The simple experiments are easily done with common household items (paper clips,glass jars, aluminum foil, batteries, etc.) and the kitchen sink. I learned something about the origins of human discovery of electricity on the very first page and I was intrigued by how magnetism and electricity interact in the real world. I especially enjoyed the section on solar power and microwave power. Easy to understand and great photos showing experiments.

Last year the physics t I gave this little book to my two pre-teen grandsons in Florida. I found it to be the sort of book that might motivate youngsters to read further. The book is replete with simple do-at-home experiments like potato batteries' lighting an LED, making a home compass: creations a kid can cobble together with items found in the average household.The book has four sections and some appendices. By the time I got to Sections 3 and 4, I recognized that AC and DC, the magnetic field around a straight wire, Lorentz forces, etc., were the stuff I'd encountered in my freshman physics course at Harvard long ago. However, in "A Kitchen Course" the physics-teacher authors had elegantly minimized the mathematics required to gain a basic idea of the concepts that their demonstrations illustrated. All too often undergraduates, especially those in the biological or pre-medical programs, are snowed by equations and proofs, and emerge with little feeling about the

actual physics. However, the underlying mathematics was not neglected; it was conveniently salted away in a two-page appendix at the end, with the appropriate page numbers usefully referenced.My own AB in physics is decades old, long pre-dating the computer age. So I had some trouble locating the video links (troubles my grandsons probaboy didn't have). After the publishers (Springer) helped me resolve the computer snag, I was delighted to see a kitchen-type experiment on Magneto Hydrodynamics -- just water swirling in a glass. (There were other videos, such as how to make a motor, a magnet falling through a copper pipe, a timing circuit, and so on.)I saw a couple of typos, one of which gave Ben Franklin's dates as 1776-1790 (should have been 1706-1790 for that long-lived gentleman).Finally, the book seems overpriced at $29.95, but there ae cheaper copies available on the internet. Both youngsters and beginning college students ought to find it delightful and of value.

ÃƒÂ¢Ã â ¬Ã Å“A Kitchen CourseÃƒÂ¢Ã â ¬Ã Â|ÃƒÂ¢Ã â ¬Ã Â• is, as the authors describe ÃƒÂ¢Ã â ¬Ã Å“ÃƒÂ¢Ã â ¬Ã Â|a grounding in the basics ÃƒÂ¢Ã â ¬Ã â œ historical and modern ÃƒÂ¢Ã â ¬Ã â œ of electricity and magnetismÃƒÂ¢Ã â ¬Ã Â|ÃƒÂ¢Ã â ¬Ã Â• The authors take the reader from basic concepts through the most up-to-date applications. Along the way, they describe experiments that can be done with common and easily obtained materials supporting their explanations. The book is expansive in scope, providing essential details to give the reader a background and a desire to go deeper. (Many Web-based demos are suggested.) It is a neat little book that not only answers basic questions about electricity and magnetism but also helps the curious to formulate questions that can further a readerÃƒÂ¢Ã â ¬Ã â„¢sÃƒÂ¢Ã â ¬Ã â •or science chefÃƒÂ¢Ã â ¬Ã â„¢sÃƒÂ¢Ã â ¬Ã â •understanding.

magnetism, bioelectricity and electricity Electricity And Magnetism (Reading Essentials in Science) Electricity and Magnetism (Usborne Understand Science) A Project Guide to Electricity and Magnetism (Physical Science Projects for Kids) Electricity and Magnetism Essential Calculus-based Physics Study Guide Workbook: Electricity and Magnetism (Learn Physics with Calculus Step-by-Step Book 2) RealTime Physics Active Learning Laboratories, Module 3: Electricity and Magnetism Electricity And Magnetism: Stop Faking It! Finally Understanding Science So You Can Teach It Workshop Physics Activity Guide, Module 4: Electricity and Magnetism 100 Instructive Calculus-based Physics Examples: Electricity and Magnetism (Calculus-based Physics Problems with Solutions Book 2) Essential Calculus-based Physics Study Guide Workbook: Electricity and Magnetism (Learn Physics with Calculus Step-by-Step) (Volume 2)