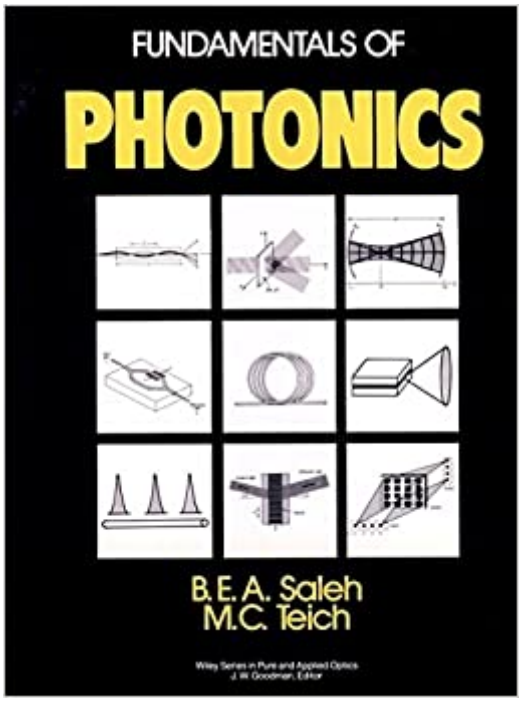
Fundamentals Of Photonics (Wiley Series In Pure And Applied Optics)



Synopsis

In recent years, photonics has found increasing applications in such areas as communications, signal processing, computing, sensing, display, printing, and energy transport. Now, Fundamentals of Photonics is the first self-contained introductory-level textbook to offer a thorough survey of this rapidly expanding area of engineering and applied physics. Featuring a logical blend of theory and applications, coverage includes detailed accounts of the primary theories of light, including ray optics, wave optics, electromagnetic optics, and photon optics, as well as the interaction of light with matter, and the theory of semiconductor materials and their optical properties. Presented at increasing levels of complexity, these sections serve as building blocks for the treatment of more advanced topics, such as Fourier optics and holography, guidedwave and fiber optics, photon sources and detectors, electro-optic and acousto-optic devices, nonlinear optical devices, fiber-optic communications, and photonic switching and computing. Included are such vital topics as: Generation of coherent light by lasers, and incoherent light by luminescence sources such as light-emitting diodes Transmission of light through optical components (lenses, apertures, and imaging systems), waveguides, and fibers Modulation, switching, and scanning of light through the use of electrically, acoustically, and optically controlled devices Amplification and frequency conversion of light by the use of wave interactions in nonlinear materials Detection of light by means of semiconductor photodetectors Each chapter contains summaries, highlighted equations, problem sets and exercises, and selected reading lists. Examples of real systems are included to emphasize the concepts governing applications of current interest, and appendices summarize the properties of one- and two-dimensional Fourier transforms, linear-systems theory, and modes of linear systems. An Instructor’s Manual presenting detailed solutions to all the problems in the book is available from the Wiley editorial department.

Book Information

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Customer Reviews

Solutions Manual available. -- The publisher, John Wiley & Sons

Covers the interaction of optics and electronics and their important applications in lasers, optical fibers and semiconductor optical devices. Examines the four theories of light--ray, wave, electromagnetic and photon optics as well as the theory of interaction of light with matter. Numerous applications and examples of actual systems are also provided.

I took a graduate level Introduction to Photonics class last semester...until I dropped it in October. The professor was not great, and when I tried to get what I needed from the book, I'd instead be greeted by a few "of courses" followed by the result, without every actually proving or explaining anything.So I give this book three stars because while it is awful as a textbook and if your professor assigns this book in an intro class you really should find another one to supplement, I could tell that it's probably a good reference book. I have another book on my shelf (the Boas Math Methods book) that is like that too--great reference if you need to remember something, not good for learning something. But I had a great professor for the course we used Boas in, so that was okay, and I still refer back to it even now.I also spoke to someone who stuck out the class and I described the book to as "this book is written for people who already know photonics." He agreed that once he finally got to the point of being comfortable with the foundational material and the class moved into some more specific applications--and therefore he had become part of this book's audience--that the book became a lot more useful.So yes, awful textbook, probably a good reference if you already know the material. 3 stars to reflect this ambiguity.

The book came ripped in the side, not so pleased cause it said "new".

The book "Fundamental of Photonics" is one of the most comprehensive textbooks in applied optics available now. Each chapter not only has in-depth of the topic at hand, but also includes a host of basic and advanced applications of the concept dealt with. This is the Bible of optics.

Just got my copy and wish I had ordered it much earlier! I find it to be much more useful than the Handbook of Optics. It’s very refreshing to find a book which has not been dumbed down so far as to be useless, yet not so mathematical as to be a stumbling block. This is one of the standard textbooks for undergraduate Photonics at Stanford.

If there is a used version, I’ll never by a new one. This quality is so good for me and the price is less than 20% of a new one. If this is for your own use, it is the best choice. Unless you don’t care about your money.

The book I received was hard bound and in a more than good condition to call it used. I am totally satisfied by the quality of this book I purchased for 21$ considering the new book costs almost 200$.

It’s a 1991 edition I guess. And a little wear. But for the price still OK

Photonics is the control, manipulation, transfer and storage of information using photons, the fundamental particles of light, and is also known as optoelectronics. As a reference, this book touches on every phase of photonics and is unsupplanted in its field even 14 years after it is published. It covers optics, lasers, semiconductor photon sources, electro-optics, and even acousto-optics in an accessible style with plenty of diagrams. There are plenty of equations explaining the theory throughout. This would be a great book if it were not for one thing- the total lack of worked examples or exercises. For engineers who like to learn by a combination of reading and doing, this leaves the reader completely unsure of his/her comprehension of the material. I have several suggestions for engineers who want to use this book to aid them in understanding photonics:1. First and foremost try to get your hands on the solutions manual (ISBN 0471311138). This way you can work the examples and know if you are on the right track.2. Get a copy of Schaum’s Outline of Optics by Hecht to work through the early material on optics. This book almost stands alone as a study guide on optics and has many worked problems that the photonics book lacks.3. Read over "Optoelectronics, Fiber Optics, and Laser Cookbook". I know it may look somewhat hokie and hobbyist in quality, but it has implementations of real optoelectronic circuits that work.4. Finally, get a copy of an old book "Electro-optics" by Pinson. It is not as nearly as comprehensive as Photonics, but it does have some good worked out examples and explains the basics very well.P.S.- After 15 years a second edition is scheduled for release in October 2006

(ISBN 0471784761) by the same publisher as the first edition. It will be 200 pages longer and feature two new chapters to cover the advances in the field of photonics: Photonic-Crystal Optics and Ultrafast Optics. All the chapters have been updated and many new sections have been added including Laguerre-Gaugassian beams, Sellemeier-equation analysis, photonic-crystal waveguides, holey and photonic-crystal fibers, microsphere resonators, optical coherence tomography, photon orbital angular momentum, Bohr theory, Raman amplifiers, low-noise avalanche photodiodes, tuning curves, and dispersion management. So, if you can wait on purchasing this book you might want to do so since it is so expensive, and you wouldn't want to be stuck with an expensive book that is not the latest edition!