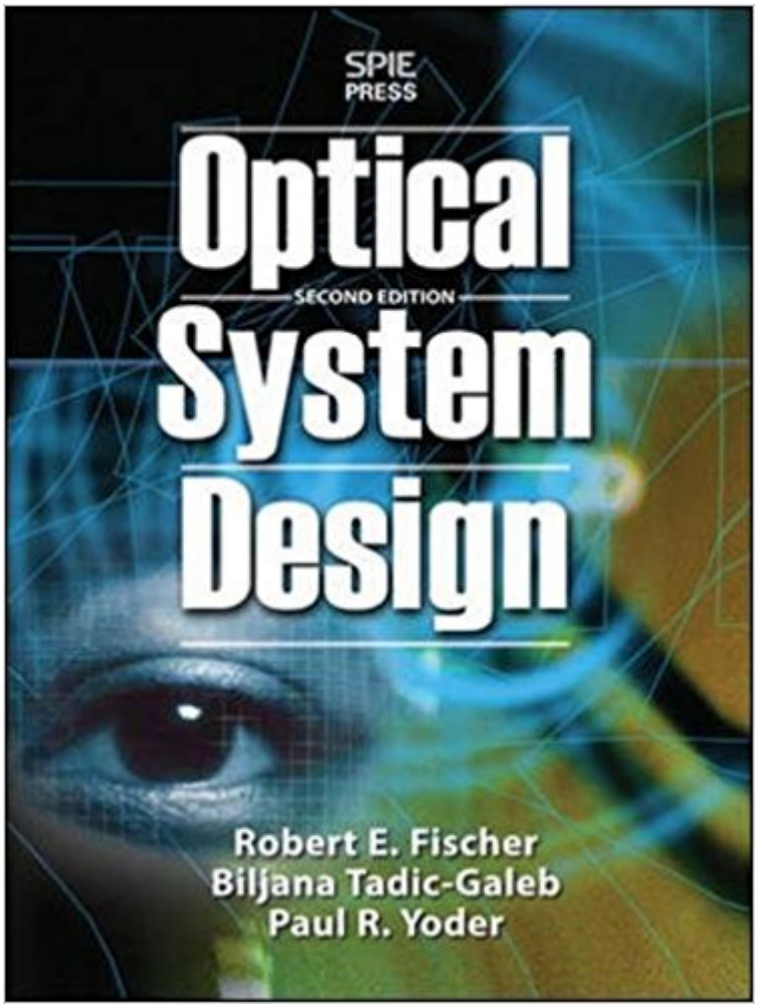
Optical System Design, Second Edition (Electronics)



Synopsis

Learn advanced optical design techniques from the field’s most respected guide Honed for more than 20 years in an SPIE professional course taught by renowned optical systems designer Robert E. Fischer, Optical System Design, Second Edition brings you the latest cutting-edge design techniques and more than 400 detailed diagrams that clearly illustrate every major procedure in optical design. This thoroughly updated resource helps you work better and faster with computer-aided optical design techniques, diffractive optics, and the latest applications, including digital imaging, telecommunications, and machine vision. No need for complex, unnecessary mathematical derivations-instead, you get hundreds of examples that break the techniques down into understandable steps. For twenty-first century optical design without the mystery, the authoritative Optical Systems Design, Second Edition features: Computer-aided design use explained through sample problems Case studies of third-millennium applications in digital imaging, sensors, lasers, machine vision, and more New chapters on optomechanical design, systems analysis, and stray-light suppression New chapter on polarization including lots of really useful information New and expanded chapter on diffractive optics Techniques for getting rid of geometrical aberrations Testing, tolerancing, and manufacturing guidance Intelligent use of aspheric surfaces in optical design Pointers on using off-the-shelf optics Basic optical principles and solutions for common and advanced design problems

Book Information

Series: Electronics
Hardcover: 809 pages
Publisher: McGraw-Hill Education; 2 edition (February 14, 2008)
Language: English
ISBN-10: 0071472487
ISBN-13: 978-0071472487
Product Dimensions: 7.7 x 1.8 x 9.4 inches
Shipping Weight: 3.4 pounds (View shipping rates and policies)
Average Customer Review: 3.8 out of 5 stars 15 customer reviews
Best Sellers Rank: #772,490 in Books (See Top 100 in Books) #48 inÃ Â Books > Engineering & Transportation > Engineering > Electrical & Electronics > Electronics > Optoelectronics #279 inÃ Â Books > Science & Math > Physics > Optics #536 inÃ Â Books > Arts & Photography > Architecture > Landscape

Customer Reviews

Robert Fischer is the president of Optics 1, Inc., and a past president of SPIE. Biljana Tadic-Galeb (Westlake Village, CA) is a senior optical staff engineer at Optics 1. Paul Yoder is a consultant specializing in optical and opto-mechanical design.

Based on other reviews, you expect a highly polished product - full of glossy enlightening diagrams and explanations. The book is OK and conveys many important notions of optics adequately, especially if you have some background knowledge. However, at times, it feels like a potpourri, too wide to be under control and lacking in rigor. The authors present a few formulas at times and assure us that they could write many more "if they wanted to". However, this book really feels like the work of practitioners - a bit thin on the theory side. Many figures have a printing quality too low to be readable (so much for the Nyquist criteria, which by no coincidence is presented quite poorly) and the chapter on diffractive optics is a didactic catastrophe. Just because a book has been around for a long time and is respected in the field doesn't mean that it can't be improved upon. Still, I find myself reading the book time and again. The book will complement nicely Born and Wolf, which lies at the other extreme.

In the acknowledgements the authors state they "wanted to create a book in the field of optical system design that was clear and easy to understand" - Mission accomplished!This book is indeed easy to understand but nevertheless provides detailed explanations of how to design an optical system. While not deeply mathematical there are sufficent formulaes provided (with examples) so you can understand what to do and how to do it. If you were puzzled as to why achromatic lenses are used you won't be after you read this book. The book also explains how distortion occurs and how to get rid of it. Also there are sections on mechanical components such as lens mounting etc. The book also explains how to use typical optical design software.My only (slight) dissapointment was the relatively few descriptions of typical systems - but using the book you could design these from first principles. Also to be fair there are so many designs out there that this is probabaly asking too much.I bought this book because as an electronics engineer I did not know enough about optical systems to be able to design one. Reading this book and downloading some freeware optical design software (and using the book to help understand the outputs) has solved that problem

Having studied the comments on four other books before holding my breath and purchasing "Optical System Design," I was still worried that it would turn out to be a physics-oriented treatment of the

subject despite the comments.I was happily surprised.Not only is this book well- and often humorously-written (to me at least), it has memorable explanations which make applying the knowledge easier.In particular, the excellent treatment throughout the book on the six major third-order aberrations' causes has helped me use my optical design tools more correctly. I do not guess about specific changes, I know what to expect when making a change in the design.I have found over the years that purchasing two texts on a topic is a good strategy. One must be a "thick book," like "Optical System Design," and the other a "thin book" which serves as a map. I'm still looking for the "thin" compliment to OD, but its layout and index are good enough that I will probably not follow my normal pattern.

Although well-written and understandable, this is not a textbook for beginners but a valuable reference guide for the semi-experienced. It provides great overviews and summaries on key optical technologies. However, the index and glossary are a bit incomplete to allow quick referencing. Nonetheless, I highly recommend this book for anyone who is interested in photonics.

This book explains the concenpt of geometrical optics and opto-mechanics. Without formula, they use a lot of figures which are very helpful to understand. The English is also very clear and understandable for foreigners. Really good text book.

Excellent book and transaction

This book provides an excellent starting point for most optical system designs, as well as a good set of foundational material. Being able to have this book on my phone as a quick reference has replaced most of the "Field Guide" books I once used.

I love this book. Great practical explanations.

Techniques in Optical Lithography (SPIE Tutorial Texts in Optical Engineering Vol. TT47) Electro-Optical Displays (Optical Science and Engineering) Handbook of Organic Materials for Optical and (Opto)Electronic Devices: Properties and Applications (Woodhead Publishing Series in Electronic and Optical Materials) optical communication and splicing: optical networks Photonics: Optical Electronics in Modern Communications (The Oxford Series in Electrical and Computer Engineering) Optical Processes in Semiconductors (Prentice-Hall electrical engineering series. Solid state physical electronics series) Graphic Design Success: Over 100 Tips for Beginners in Graphic Design: Graphic Design Basics for Beginners, Save Time and Jump Start Your Success (graphic ... graphic design beginner, design skills) Drafting House Plans: A Whole House System for Planning and Design (A Simplified Design System) Shocking! Where Does Electricity Come From? Electricity and Electronics for Kids - Children's Electricity & Electronics Scaling and Integration of High-Speed Electronics and Optomechanical Systems (Selected Topics in Electronics and Systems) Science Fair Projects With Electricity & Electronics: Electricity & Electronics Make: Design Your Own Circuits: 17 Exciting Design Ideas for New Electronics Projects Ichimoku Heikin Ashi Trading System Second Edition: Guide to a Deadly accurate Trading System Assessment, Evaluation, and Programming System for Infants and Children (AEPSÃ Â®), Second Edition, Curriculum for Three to Six Years (AEPS: Assessment, Evalutaion, and Programming System (Unnumbered))