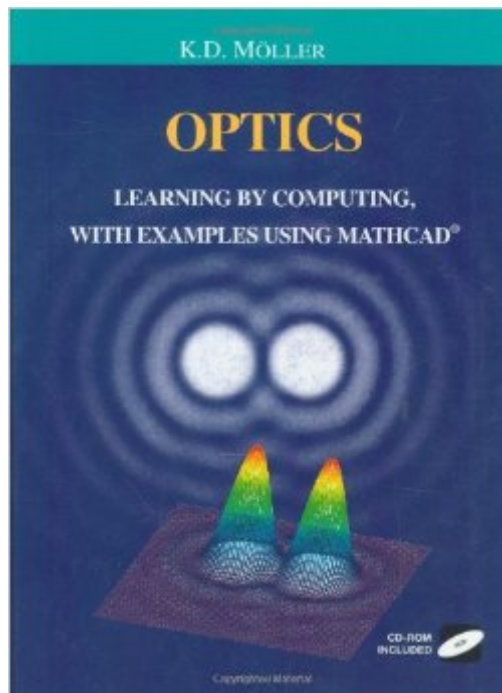# Optics: Learning By Computing, With Examples Using MathCad (Springer Series In Operations Research)

Synopsis

This book is intended for a one semester course in optics for juniors and seniors in science and engineering; it uses Mathcad(R) scripts to provide a simulated laboratory where students can learn by exploration and discovery instead of passive absorption. The text covers all the standard topics of a traditional optics course, including: geometrical optics and aberration, interference and diffraction, coherence, Maxwell's equations, wave guides and propagating modes, blackbody radiation, atomic emission and lasers, optical properties of materials, Fourier transforms and FT spectroscopy, image formation, and holography. It contains step by step derivations of all basic formulas in geometrical, wave and Fourier optics. The basic text is supplemented by over 170 Mathcad files, each suggesting programs to solve a particular problem, and each linked to a topic in or application of optics. The computer files are dynamic, allowing the reader to see instantly the effects of changing parameters in the equations. Students are thus encouraged to ask "what...if" questions to asses the physical implications of the formulas. The book is written for the study of particular projects but can easily be adapted to a variation of related studies. The three-fold arrangement of text, applications, and files makes the book suitable for "self-learning" by by scientists or engineers who would like to refresh their knowledge of optics. All files are printed out and are available on a CD and may well serve as starting points to find solutions to more complex problems as experienced by engineers in their applications.

Book Information

Series: Springer Series in Operations Research

Hardcover: 443 pages

Publisher: Springer; 1 edition (December 6, 2002)

Language: English

ISBN-10: 0387953604

ISBN-13: 978-0387953601

Product Dimensions: 7 x 1.1 x 9.7 inches

Shipping Weight: 2.1 pounds (View shipping rates and policies)

Average Customer Review: Be the first to review this item

Best Sellers Rank: #1,910,415 in Books (See Top 100 in Books)   #367 inÂ Books > Science & Math > Physics > Light   #380 inÂ Books > Computers & Technology > Computer Science > AI & Machine Learning > Computer Vision & Pattern Recognition   #804 inÂ Books > Science & Math > Physics > Optics

Optics: Learning by Computing, with Examples Using MathCad (Springer Series in Operations Research) Last-Minute Optics: A Concise Review of Optics, Refraction, and Contact Lenses Numerical Optimization (Springer Series in Operations Research and Financial Engineering) Statistics and Data Analysis for Financial Engineering: with R examples (Springer Texts in Statistics) Corporate Taxation: Examples And Explanations (Examples & Explanations) Guide to Web Application and Platform Architectures (Springer Professional Computing) Introduction to Evolutionary Computing (Natural Computing Series) Wireless Computing in Medicine: From Nano to Cloud with Ethical and Legal Implications (Nature-Inspired Computing Series) CUDA Programming: A Developer's Guide to Parallel Computing with GPUs (Applications of Gpu Computing) Strategic Computing: DARPA and the Quest for Machine Intelligence, 1983-1993 (History of Computing) Dependable Computing for Critical Applications 5 (Dependable Computing and Fault-Tolerant Systems) Operations Management (McGraw-Hill Series in Operations and Decision Sciences) Operations Management in the Supply Chain: Decisions and Cases (McGraw-Hill/Irwin Series, Operations and Decision Sciences) Operations Management: Contemporary Concepts and Cases (Mcgraw-Hill/Irwin Series Operations and Decision Sciences) Operations and Supply Chain Management: The Core (Book Only) (McGraw-Hill/Irwin Series Operations and Decision Sciences) Managing Operations Across the Supply Chain (McGraw-Hill/Irwin Series in Operations and Decision Sciences) Operations & Supply Management wStudent DVD Rom (McGraw-Hill/Irwin Series Operations and Decision Sciences) Loose-leaf for Operations Management (The Mcgraw-Hill Series in Operations and Decision Sciences) Production and Operations Analysis (McGraw-Hill/Irwin Series Operations and Decision Sciences) Practical Guide to Clinical Computing Systems, Second Edition: Design, Operations, and Infrastructure