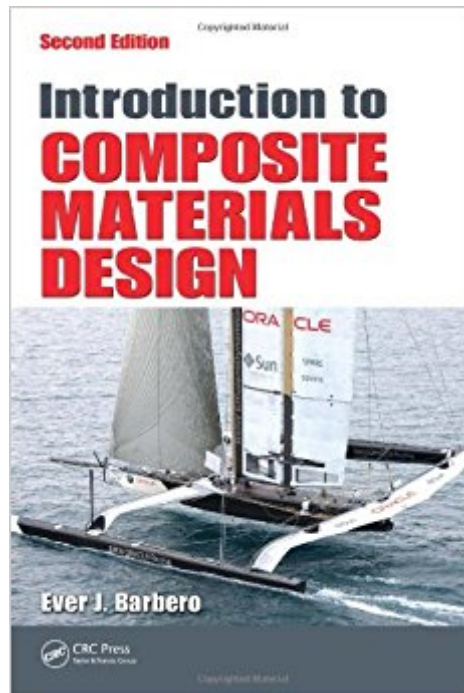




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Introduction To Composite Materials Design, Second Edition



Synopsis

Presenting a wealth of completely revised examples and new information, *Introduction to Composite Materials Design, Second Edition* greatly improves on the bestselling first edition. It incorporates state-of-the-art advances in knowledge and design methods that have taken place over the last 10 years, yet maintains the distinguishing features and vital content of the original. New material in this second edition:

- Introduces new background topics, including design for reliability and fracture mechanics
- Revises and updates information on polymer matrices, modern fibers (e.g., carbon nanotubes, Basalt, Vectran) and fiber forms such as textiles/fabrics
- Includes new information on Vacuum Assisted Resin Transfer Molding (VARTM)
- Incorporates major advances in prediction of unidirectional-lamina properties
- Reworks sections on material failure, including the most advanced prediction and design methodologies, such as in situ strength and Mohr-Coulomb criterion, etc.
- Covers all aspects of preliminary design, relegating finite element analysis to a separate textbook
- Discusses methodology used to perform damage mechanics analysis of laminated composites accounting for the main damage modes: longitudinal tension, longitudinal compression, transverse tension, in-plane shear, and transverse compression
- Presents in-depth analysis of composites reinforced with plain, twill, and satin weaves, as well as with random fiber reinforcements
- Expands the analysis of thin walled beams with newly developed examples and MATLAB® code
- Addresses external strengthening of reinforced-concrete beams, columns, and structural members subjected to both axial and bending loads

The author distributes 78 fully developed examples throughout the book to illustrate the application of presented analysis techniques and design methodology, making this textbook ideally suited for self-study. Requiring no more than senior undergraduate-level understanding of math and mechanics, it remains an invaluable tool for students in the engineering disciplines, as well as for self-studying, practicing engineers.

Book Information

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Customer Reviews

Design with composite materials is often conducted in a two-step process: "preliminary design" and "detailed analysis". The former is covered by "Introduction to Composite Materials Design-2nd edition" and the free online software cadec-online.com is helpful for that as well. In large aerospace companies, once preliminary design is done, the project is handed over to the "detailed analysis" team, but most often than not the whole process is done by the same person or same team.

Detailed analysis is covered by my twin boons: "Finite Element Analysis of Composites Materials" Using Abaqus and Using ANSYS, both 2nd Edition. These books cover all "mechanics" aspects of the design including deformation and strength. Other topics might be relevant depending on the application are covered in "Multifunctional Composites".

Ever J. Barbero, BSME, BSEE, Ph.D., is a Fellow of ASME and SAMPE, and professor of Mechanical and Aerospace Engineering at West Virginia University. He is recognized internationally for his work on material models for composite materials. He is the author of a related textbook, Finite Element Analysis of Composite Materials, two patents, and more than 100 peer-reviewed publications.

Barbero is a very talented technical writer. This book is incredibly easy to understand and it has plenty of example problems. This book strikes a nice balance between explaining the theory behind models, and teaching how to use the models. It fits well with Barbero's book on using FEM to model the behavior of composite materials, and between this book and Barbero's other FEM book, my senior engineering design team was able to accurately model a simple composite structure. Good book, well written, very useful.

This is a great introduction to composite materials. If you have an undergraduate degree (or upper-level undergrad student), this is a great text to start understanding composites. It walks you through just about everything you need to know, without getting into math that we do not have the

ability to understand. The examples do a good job of putting things together. The only negative is there are no solutions to the problems. As a self-study, this is a pretty big downfall, but I understand why the publisher decided to do this. I am about half way through the book.

Starts off with really good explanation on composites. The bad thing about this book is there are no answers to the questions. Also, many questions aren't covered in the book.

THIS BOOK IS REALLY WHAT YOU NEED AS INTRODUCTION TO COMPOSITE DESIGN WITH THE OTHER EXCEPTIONAL BOOK ABOUT "COMPOSITE BASICS" FROM ANDREW C. MARSHALL THAT YOU MAY READ FIRST.

Great Book. Has a lot of math equations in it and so as a Calc I student a little hard to understand, but with some help I Am getting it. Very good information. This is my text book for an Advanced Composite class.

Very useful for composite design.

good

This was a pretty decent textbook, I was required to get it for one of my classes but it was very informational.

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