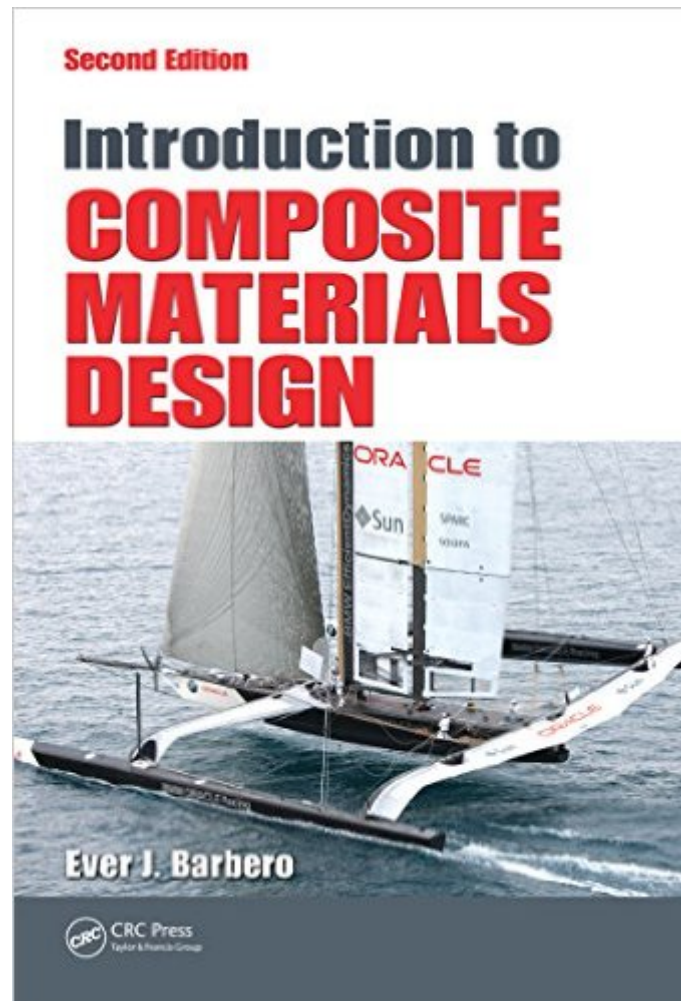


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# Introduction To Composite Materials Design, Second Edition



## 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

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.

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.

I've taken Dr. Barbero's Composite FEA course at West Virginia University. Before commencement of the FEA course, I used this book to review the basics. I thoroughly enjoyed taking the course and

learnt a lot. This book is very easy to read and the examples given help you with the concepts being taught. Also, the design examples are practical in nature and can be used as a starting point in real world applications. The data tables given in the first few chapters are very useful. This book is a very good reference for composite designers.

It is an easy-to-read introduction to composite materials. The author tries to make everything simple and there are also many graphs and data provided which offer great help on the understanding of the subject.

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