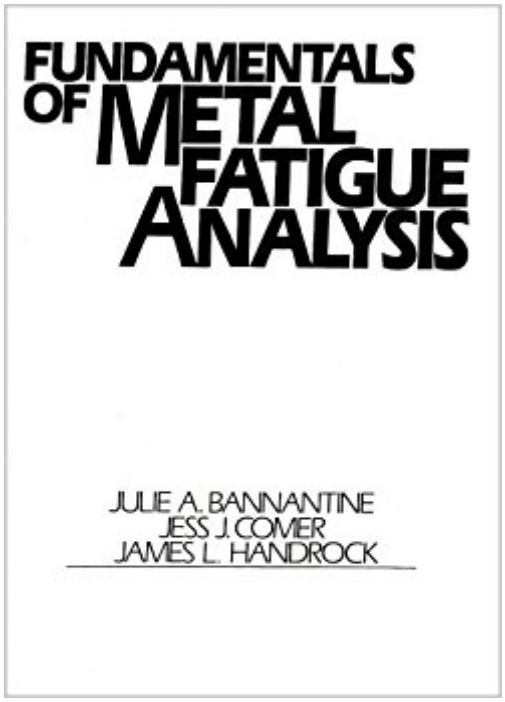
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Fundamentals Of Metal Fatigue Analysis



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Synopsis

The first book to present current methods and techniques of fatigue analysis, with a focus on developing basic skills for selecting appropriate analytical techniques. Contains numerous worked examples, chapter summaries, and problems. (vs. Fuchs/Stevens).

Book Information

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Customer Reviews

An explanation of the fine points of modern fatigue analysis methods and techniques -- from basic analytical procedures to sophisticated analysis methods.

The first book to present current methods and techniques of fatigue analysis, with a focus on developing basic skills for selecting appropriate analytical techniques. Contains numerous worked examples, chapter summaries, and problems. (vs. Fuchs/Stevens).

It came as expected.

Awesome book

I’m very glad that I bought this book and not just because it was a class requirement. People in my office often reference it for a refresher. It’s very well written and set up stupendously. I never post

product reviews (let alone textbooks), but this one deserves a read.CB

I am a Principal Senior Test & Durability Engineer in the Automotive business. I have MSEE & MSME degrees. We are basically making Autoparts out of metal. So metal fatigue, developing S/N curves, material properties, etc are extremely important. I have a number of engineers working for me who have come to our firm within a few years of leaving school. I assign this book as a beginning course to them, for the first two to three weeks or so that they are working in my department. This is a get up to speed, learn the vocabulary and basic concepts and equations task. As the other reviewer noter, there ARE difficulties with the problems in the text, but it is a good basic start and nothing fundamentally unsound is presented. Along with this beginning material I also assign the SAE book by Wright, "Testing Automotive Materials and Components." It is an easy two day read. It is mostly a descriptive book, while Banantine, & Comer has much more quantitative material. Which I expect my department to be comfortable with.Remember, Bannantine and Comer developed this book as notes for an upper level Undergrad Course while they were grad students at Univ. of Illinois.For a much more rigourous treatment, I recommend Dowling’s book, but that really is a graduate text, and can’t be completed by an engineer in a couple of weeks working full time.Your engineers should also be familiar with the material in the standard sophomore year Statics and Mechanics of Materials courses. Beer & Johnson’s books are my choice, but McGill and King is also a good choice. Another choice for this material are the Schaum’s Outlines. But Schaums doesn’t derive or develop the equations. Schaums does not publish a metal fatigue book.The other reviewer’s criticism on a lack of statistical material is valid. But most undergraduate stat courses in engineer are more oriented towards production (XBar charts, etc.) or Digital Signal Processing material (for EE’s). Graduate stat courses are more oriented towards design of experiments and research. Banantine & Comer could use a Chapter on Weibull and on Reliability and Confidence levels, along with the statistics needed to develop & use E/N, S/N, & Load Life curves. ASTM and SAE both have standards and texts giving examples for developing such curves. They are technically dense, but it is good for all engineers to learn how to extract usable information from such technically difficult materal.

I have used this text three times for teaching a fatigue course.This text is well written. It is clear and understandable in the presentation of concepts. It covers the right amount of material for a one semester undergraduate elective course in fatigue, however, it’s too basic for gradutate level study. The three apporoaches to fatigue life analysis (stress-life, strain-life, and crack growth) are clearly

explained along with a cursory but useful coverage of Linear Elastic Fracture Mechanics. Examples are clearly laid out. One nice feature is the summary of important concepts and equations at the end of each chapter. Another nice feature is chapter 6 which compares and reviews the strenths and limits of applicability of each method.A full chapter should be added regarding the statistical considerations of fatigue analysis (this important topic is completely skipped). The notation used is inconsistent and confusing at times, particularly with regard to stress/strain amplitude versus range. The homework problems are sub-par. There are relatively few numerical problems compared to typical texts. There are incompletely defined problems and misleading/confusing problems. This is the weakest part of the text.

I am not a fan of this book, particularly because of the end of chapter problems. The examples in the text do not do a good job of preparing the reader for these exercises. In general (not just the in text examples), the explanations tend to skip steps and gloss over important points. The book is very small and does not contain enough information to make it worth the price tag.

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