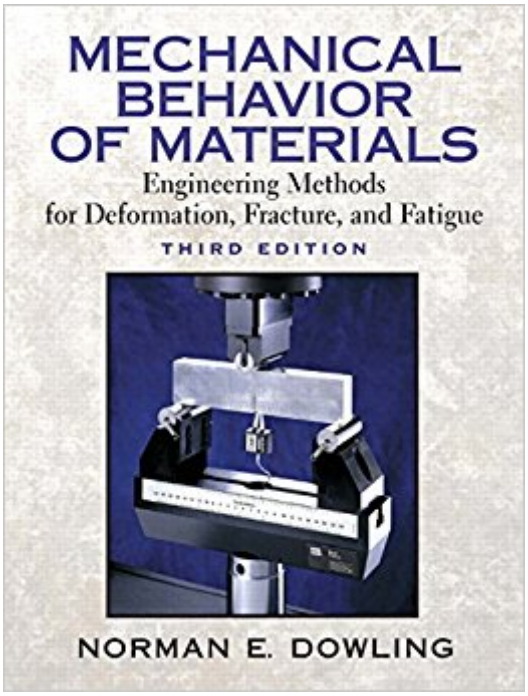
Mechanical Behavior Of Materials (3rd Edition)



Synopsis

This respected handbook introduces the entire spectrum of mechanical behavior of materials, emphasizing practical engineering methods for testing structural materials to obtain their properties, and predicting their strength and life when used for machines, vehicles, and structures. Features expanded discussions ofsafety factors, stress and strain, bending and torsion tests, unknown fiber fraction, 3-D stresses, and modified-Mohr and Coulomb-Mohr criteria. Also addresses maximum shear and octahedral shear criteria, load factor design, fatigue limits, notch sensitivity, R-ratio effects, mean stress relaxation, cyclic bending, mean stresses, and time-temperature parameters. Coverage of fracture mechanics allows readers to analyze the effect of cracks on strength and life without requiring advanced mathematics. Employs actual laboratory data in illustrations, examples, and problems, giving readers realistic impressions as to the actual values and behavior for the material involved. A useful reference for practicing engineers. Â Â Â Â

Book Information

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Customer Reviews

Professor Dowling has done a remarkable job in presenting his material. "Mechanical Behavior of Materials" is pedagogically solid, enabling comfortable self-study for engineering students or practicing engineers. The coverage of deformation, static failure, and fatigue failure analyses are comprehensive, and yet sufficiently detailed to be applied in practice. Individual chapters are devoted to each of the three major fatigue analysis techniques, i.e., stress, strain, and fracture mechanics methods. Each are clearly and thoroughly explained, along with their applications and

limitations. Also covered are a host of standard testing procedures, material properties for all major classes, plasticity, creep, relaxation, and material damping (a rarity). Altogether, Professor Dowling's book stands out as an exceptional example of what an engineering text should be. It is a very fine successor to an earlier, and still worthwhile work called "Stress, Strain, and Strength" by the late Professor Robert Juvinall. Another useful book, is "Metal Fatigue in Engineering", by Fuchs and Stephens.

I find it really suspicious that a lot of the reviewers here refer to the author as "professor". It makes me think that they had the author as their college professor, and maybe they were given some kind of extra credit for writing a good review about his book. But it seems that the good reviews are accurate!The majority of the book is pretty much review material (for me, at least). If you have a set of machine design books (Shigley, Juvinall, etc), then you will most likely have seen the material that's covered in the first 10 chapters of this book. The juicy part starts at chapter 11, and after that it covers stuff I haven't seen in machine design or mechanics of materials:12 and 13: plasticity14: strain-based approach to fatigue15: Creep and dampingOverall it's a really good book with clear explanations, but I encourage you to go onto the pearson website and look at the table of contents before buying. Then you can decide whether it's worth spending the hundred-something dollars for 5 chapters worth of new material, if your situation is similar to mine. I bought it because I needed it for class, and the scope is just a bit beyond Hibbeler books.

I am working as a practicing engineer and in the file of stress analyis of pressure vessels and piping. To properly understand the requirements of ASME Boiler and Pressure vessel code, particularly the 2007 edition of the code, where knowledge of stress and strain controlled fatigue as well as fracture mechnaics approach is necessary, there is no better book than professor Dowling's book. It covers things in a very simple , lucid style and in a self contained way, so that reader need not look for other references to brush up related things. The approach is physical rather than highly mathematical. The only thing I miss after reading this book is not having studied under the tutelege of Professor Dowling.

I am an undergraduate mechanical engineering student doing research on designing for metal fatigue. I have done a reasonably thorough literature review of both journal articles and textbooks. I've raided most of my professors libraries and the school library as well. I found this book to be so helpful I purchased my own copy. It is very well written and easily accessible at the undergraduate

level, not to say that it is basic. If you're trying to understand fatigue and fatigue life prediction you're going to need more than a chapter or two of Shigley's Engineering Design. Look up the table of contents on Pearson's website. Dowling's book is well organized, well written, and enjoyable to read. Pick up a used copy for a few dollars. You won't regret it.P.S. If you're working with strain gauges and need to learn a little bit more about them, HBM's free reference book on their website is worth a read.

This book is outstanding in its technical content and writing clarity. I actually had the pleasure to learn the material from Professor Dowling himself and his clear method of teaching is reflected in his writing. The book provides a solid theoretical and practical foundation on failure criteria, fracture mechanics and the mechanics of fatigue. In my case, I went on and studied several of the topics presented in the book in more detail but Professor Dowling's book is still my number one reference.Professor Dowling has actually worked in the industry and the examples and exercises are real problems made with real data.The only problem I have with the book is that I can't keep it on my shelf as my coworkers keep borrowing it.Some might argue that the book price is high but this book is one of those you can't put a price tag on. If you really think of it economically, the book is a great investment (a no brainer).

I bought this book to learn about strain-life fatigue analysis, and I can't imagine that there is a better reference out there. I am very pleased with all of the content. The book is well structured, and the the descriptions are very easy to follow. The book gave the best explanation of micro-structure and slip planes I have ever read. Stress-life analysis is covered in detail, and the last few chapters focus strain-life analysis.I highly recommend this book.I am a structural engineer and I keep this book within arm length for quick reference.

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