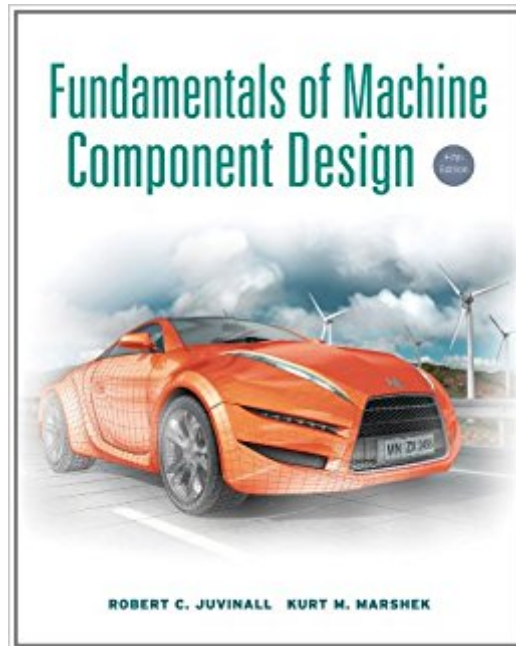




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# Fundamentals Of Machine Component Design



## Synopsis

The latest edition of Juvinall/Marshek's Fundamentals of Machine Component Design focuses on sound problem solving strategies and skills needed to navigate through large amounts of information. Revisions in the text include coverage of Fatigue in addition to a continued concentration on the fundamentals of component design. Several other new features include new learning objectives added at the beginning of all chapters; updated end-of-chapter problems, the elimination of weak problems and addition of new problems; updated applications for currency and relevance and new ones where appropriate; new system analysis problems and examples; improved sections dealing with Fatigue; expanded coverage of failure theory; and updated references.

## Book Information

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## Customer Reviews

**FIND EFFECTIVE SOLUTIONS TO MACHINE COMPONENT PROBLEMS!** While focusing on the fundamentals of component design, this practical text helps readers learn how to solve engineering problems that involve mechanical components. A proven problem-solving methodology guides readers through the process of formulating machine component problems accurately and presenting solutions clearly. In addition, numerous solved examples and end-of-chapter problems help readers master the material. Graphical procedures help readers visualize the solution format, develop added insight about the significance of the results, and determine how the design can be improved. **NEW FEATURES OF THE THIRD EDITION** Open-ended design problems have been added to most

chapters. These problems are based on making decisions that involve materials, geometry, and operating conditions. Material selection charts are now included as an aid in choosing appropriate materials for specific applications. Finite element analysis is covered in several sections to provide an introduction to this useful tool. Web site addresses are added throughout the text, providing access to additional information on topics ranging from industrial standards to properties of materials. Innovative, web-based problems are integrated throughout the text, requiring use of the internet to solve design problems. The text has been completely updated with new illustrations and photographs. --This text refers to an out of print or unavailable edition of this title.

Robert C. Juvinall, University of Michigan Kurt M. Marshek, University of Texas at Austin --This text refers to an out of print or unavailable edition of this title.

If you want quick and dirty estimations this is a good book to use. A lot of the equations in the book are derived using a lot of assuming and estimating. My professor calls them "canned equations". Take Power for example:  $W = Tn / 5252$ . That 5252 was the result of dividing  $2\pi$  by 33000. As a result your answers would be slightly off, but it's ok. Just make sure to use a factor of safety when you're designing something in real life. Some annoying things about this book: -It spends too much time covering prereq materials. It wastes too much space briefly covering mechanics of materials and material science. -It makes assumptions out of nowhere with no rationale as to why. The author just cites a book that he read and just says to use this coefficient and account for its effect in order to solve the problem. That gets super frustrating when you're trying to figure things out for the first time.

My teacher designed for Boeing for 30 plus years and had a hard time understanding this book. A lot of explanation is continually left out on many concepts. It is vague and ambiguous in many ways! My teacher recommended "Shigley's Mechanical Engineering Design" which was a little more clear on many of the concepts.

An actually decent book written for semi-competent engineering students.

Great condition

This textbook is the main text assigned to the senior design class at my college for mechanical

engineering. Very good book. However, The first half, maybe a little past half of the book is just a review of mechanics of materials and materials science. The first two chapters are a review of statics and a couple examples, maybe 3 on dynamics. I think this is good, but most students keep their dynamics, statics, mechanics of materials, thermodynamics, books to use as reference, so it feels like it is a waste of paper. In the machine component section of the book, the second "half", It covers, bolts and fasteners, welds, springs, bearings, gears, shafts, brakes and clutches, and the last chapter is on other machine components such as belts and chains and stuff like that. The chapter on welds is extremely brief to a point where it is almost useless, one is better off going to the library or bookstore to actually buy a good reference on welded joints. The chapter on bearings could use some expanding, it feels "rushed". And the last chapter is almost useless as well, it's almost like a tease. They mention interesting and very useful machine components but they offer little calculations for them, like the chain drives and the torque converter. Why bother mentioning it? It's not a reference, it's an actual machine design book. Another thing I found interesting is that for a couple of chapters and homework problems they refer you to information from websites online. Thing is, it is a book most would like to keep, but what five years from now? Will these web pages still be up? Overall it is a good book. But better books are out there.

This is a great book! It covers a lot of topics in a concise and easy to understand manner. This book has functioned as my toolbox for some time. I highly recommend it to any engineer that needs a reference book. If you are still in school get this book early. It might save you some headaches down the line.

This is a textbook for mechanical engineering design and also a reference book for practicing mechanical engineers. It is assumed that the reader has had courses in statics, dynamics, strength of materials, and material science. In other words, it is assumed you are the equivalent of at least a junior undergraduate in mechanical engineering. The first section of the book functions as a fast-paced review of the aforementioned prerequisites. Don't expect elementary straight numerical problems even in the introductory section. The author gets down to business immediately with example problems that involve actual mechanical devices. The example problem solutions are excellent with separate solution sections labeled "Known", "Find", "Schematic and given data", "Assumptions", "Analysis", and "Comment". Each chapter has solutions to a few of the many exercises. Of particular interest in section one is chapter 8, "Fatigue", and chapter 9, "Surface Damage". Chapter 8 is important because it contains a simplified, condensed, and introductory

version of fatigue design and fatigue crack growth, and is probably going to be new material for many readers. Chapter 9 deals with the various kinds of surface deterioration in machine components. This is important because more machine parts fail because of surface damage than from actual breakage. Part two of the book is concerned with the application of the fundamentals of mechanical engineering to specific machine components. In practice, problems involving the design, analysis, or application of machine members can seldom be solved by applying the fundamentals alone. Also, there is seldom just one right answer. This second section of the book gives the engineer exposure with these types of problems. Each chapter in this section deals with design issues in particular types of mechanical devices - springs, gears, bearings, clutches, brakes, etc. The final chapter of the section is a case study of the first commercially successful automotive automatic transmission, drawing on the knowledge of all of the individual devices studied in previous chapters of part two. The updates to this fourth edition versus the third edition are: \* Chapter 1 has some new material including a hierarchy of design that sets design guidelines for minimizing risk as well as the documenting of a new product. \* Section 3.14 "Engineering Material Selection Process" is new material. \* Section 6.4 on "Fracture Mechanics - Applications" has been expanded. \* There are two new sections in Chapter 8 entitled "Fatigue Crack Growth" and "General Approach for Fatigue Design". \* There is more reference to various websites in this edition. \* Both the example and homework problems have been revised. The third and previous edition of this book is only two years older than the current fourth edition, and actually contains about 100 pages more material than the fourth edition. Given the high cost of the fourth edition, and the fact that the third edition can be obtained used rather inexpensively, you might want to consider getting the third edition of this book if you do not consider this list of new features essential. A good companion to this book is the latest edition of "Machinery's Handbook" since it has equations and tables in a very concise format. However, I highly recommend you get a copy of either the third or fourth edition of this book too. It has a wealth of material on mechanical design, and if you are already a mechanical engineer, it will make you fall in love with the discipline all over again.

Required textbook for a Machine Design course. Much more accessible than Shigley's (although that is apparently a classic textbook on Machine Design - I have both). Better explanations and seemingly more thorough on the applications side compared to Shigley's.

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