

# Fundamentals Of Tool Design, 4th Edition



## Synopsis

Learn how tool designers use the CAD system to produce models and detailed drawings, as well as carry out design analysis, simulation and prototypes. Features are expanded explanations of such state-of-the-art CAD-based design technologies as 3D solid modeling and rapid prototyping. You'll see examples of quick change tooling and workholding designs. This book also details advances in automated tool handling, bar coding for electronic tool identification, laser setting of tool lengths, AGV's in tool control, and tool designs for NC. You'll get tooling ideas from examples of modular tooling systems, mounted modular tooling, tooling blocks, and tooling cubes.

## Book Information

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## Customer Reviews

Dr. John G. Nee, CMfgE, professor in the Department of Industrial and Technology Engineering at Central Michigan University, has added new, cutting edge material to increase the book's worth to the students, engineers, and others who form its audience.

The Fourth Edition of "Fundamentals of Tool Design" is a revision of a book originally published in 1962. There is a chapter dealing with the many ways computers are being used in the field as well as some treatment of GD&T principals. Both new topics are "added on" and not well integrated. This is a handbook that can also be used as a textbook. In textbook fashion each chapter has a Q&A section at the end. Subjects covered are quite comprehensive and that means that few if any

persons are likely to use all of this information. This book remains true to its name by doing a thorough job on the fundamental concepts. That is not to say there is no meat in the book. Chapter 4 covers Workholding Principles in about 100 pages and is well worth reviewing even by experienced persons. There are very useful tables throughout the book that can be used to do the problems at the end of chapter. Any serious tool designer will want to get a "Machinery's Handbook" or other comprehensive and up-to-date reference for feeds, speeds, and material properties. There has to be a drawing, photo, or illustration for every one of it's 750+ pages, maybe more than one per page. Some of the main chapters include: Workholding Principles, Jig Design, Fixture Design, Design of Pressworking Tools, and Bending, Forming, Drawing, and Forging Dies. To round out this wide variety of topics there are chapters covering machining fundamentals, inspection and welding fixtures, and considerations for new CNC techniques. It is reasonable to expect that a person with some shop skills could read this book and design simple jigs and fixtures. It is probably not reasonable to expect a person to design a sheet metal stamping die or forging die after studying this book. You would be able to understand all the major parts of a sheet metal die and be able to buy a die more intelligently. There is also a good deal of information useful to the product designer who needs to know what the limits of the manufacturing processes are (e.g. minimum radiuses, tolerance budgeting between parts and process, and some quick cost estimating formulas for tooling and manufacturing.

Chapter Name Fundamentals of Tool Design, 4th Edition Keywords Author(s)/Editor(s) SME Staff  
Published By Society of Manufacturing Engineers Abstract For over 37 years, hundreds of engineers and tool designers have been contributing their knowledge and expertise to Fundamentals of Tool Design. You'll find all the answers and examples you need to design successful tools. Designs are explained for dozens of processes including tools for machining, punching, blanking, inspection, gaging, welding, mechanical joining, and adhesive bonding. You'll also find the latest ideas in modular tooling, for numerical control, and quick change tooling. Detailed die designs, pressworking tools, progressive dies, and dies for bending, forming, and drawing are also explained. Each chapter details the "nuts & bolts" you need to know that impact your tool designs such as manufacturing processes, material science, tool layout, cost analysis, calculating economical lot sizes, safety, and more. You'll also find the latest on CAD in tool design including hardware, software, interactive graphics, stress analysis, design optimization, design analysis and standardization, and more. This new edition features basic through advanced tool designs plus significant updates to selected chapters, including: Updated text and graphics that

conform to ASME Y14.5M-1994 Dimensioning and Tolerancing Standard, and an updated look at CAD applications in tool design with explanations of 3D solid modeling and data exchange standards.

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