



Book Reviews

Mechanism Design: Enumeration of Kinematic Structures According to Function, by Lung-Wen Tsai, CRC Press, Boca Raton, Florida, 2000.

The most difficult problem most mechanism designers face at the conceptual design phase is the creation and selection of a most promising kinematic structure. *Mechanism Design: Enumeration of Kinematic Structures According to Function* introduces a methodology for systematic enumeration and classification of mechanisms that is not available in any other resource. With a partly analytical and partly algorithmic approach, the author uses graph theory, combinatorial analysis, and computer algorithms to create kinematic structures of the same nature in a systematic and unbiased manner. He sketches mechanism structures, evaluates them with respect to the remaining functional requirements, and provides numerous atlases of mechanisms that can be used by engineers as a source of ideas for mechanism and machine design. This book presents you with a methodology to arrive at the best design in the shortest time possible and, therefore, improve the product quality.

Table of Contents:

- Chapter 1. Introduction
- Chapter 2. Basic Concept of Graph Theory

- Chapter 3. Structural Representations of Mechanisms
- Chapter 4. Structural Analysis of Mechanisms
- Chapter 5. Enumeration of Graphs of Kinematic Chains
- Chapter 6. Classification of Mechanisms
- Chapter 7. Epicyclic Gear Trains
- Chapter 8. Automotive Mechanisms
- Chapter 9. Robotic Mechanisms
- Appendix A. Solving m Linear Equations in n Unknowns
- Appendix B. Atlas of Contracted Graphs
- Appendix C. Atlas of Graphs of Kinematic Chains
- Appendix D. Atlas of Planar Bar Linkages
- Appendix E. Atlas of Spatial One-DOF Kinematic Chains
- Appendix F. Atlas of Epicyclic Gear Trains
- Appendix G. Atlas of Epicyclic Gear Transmission Mechanisms

Geometric Design of Linkages, by J. Michael McCarthy, Springer-Verlag, New York, 2000.

This book presents the mathematical theory of design for articulated systems called linkages. Robot manipulators, walking machines, and mechanical hands are examples of these systems, all of which rely on simple mechanical constraints to provide a complex workspace for an end-effector.