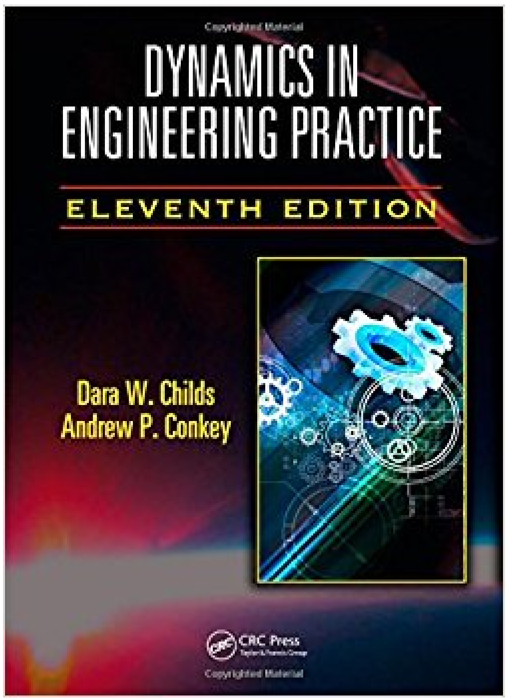
Dynamics In Engineering Practice, Eleventh Edition (Crc Series In Applied And Computational Mechanics)



Synopsis

Observing that most books on engineering dynamics left students lacking and failing to grasp the general nature of dynamics in engineering practice, the authors of Dynamics in Engineering Practice, Eleventh Edition focused their efforts on remedying the problem. This text shows readers how to develop and analyze models to predict motion. While establishing dynamics as an evolution of continuous motion, it offers a brief history of dynamics, discusses the SI and US customary unit systems, and combines topics that are typically covered in an introductory and intermediate, or possibly even an advanced dynamics course. It also contains plenty of computer example problems and enough tools to enable readers to fully grasp the subject. A free support book with worked computer examples using MATLABÃ Â® is available upon request. New in the Eleventh Edition: A large number of problems have been added; specifically, 59 new problems have been included in the original problem sets provided in chapters two through five. Chapter six has been added and covers the application of LagrangeÃ¢â ¬â„¢s equations for deriving equations of motion. The new and improved chapters in this text: Address the fundamental requirements of dynamics, including units, force, and mass, and provides a brief history of the development of dynamics Explore the kinematics of a particle, including displacement, velocity, and acceleration in one and two dimensions Cover planar kinetics of rigid bodies, starting with inertia properties and including the mass moment of inertia, the radius of gyration, and the parallel-axis formula Explain how to develop equations of motion for dynamics using LagrangeÃ¢â ¬â„¢s equations Dynamics in Engineering Practice, Eleventh Edition shows readers how to develop general kinematic equations and EOMs, analyze systems, and set up and solve equations, using a revolutionary approach to modeling and analysis along with current computer techniques.

Book Information

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Customer Reviews

"It is easy to identify students who learned dynamics from (previous editions) of this bookÃ¢â ¬Â¦. They are confident, they approach new problems based on fundamental principles, they are not afraid of dynamics. The integrated, differential equations & fundamental principles based approach removes the dread from dynamics! No longer is there fear an uncertainty of picking the correct equation & guessing the correct special caseÃ¢â ¬Â¦ every problem can be methodically approached from the same few principles and conquered."Ã¢â ¬â ¢James R Morgan, Charles Sturt University, Bathurst, NSW, Australia

Dr. Dara Childs is professor of mechanical engineering at Texas A&M University (TAMU) in College Station, Texas. He has been director of the TAMU Turbomachinery Laboratory since 1984. He has received several best-paper awards, is an American Society of Mechanical Engineers (ASME) life fellow, and received the ASME Henry R. Worthington medal for outstanding contributions in pumping machinery. He is the author of many conference and journal papers plus two prior books. Dr. Childs has taught graduate and undergraduate courses in dynamics and vibrations since 1968: Colorado State University (1968Ã¢â ¬â œ1971), University of Louisville (1971Ã¢â ¬â œ1980), TAMU (1980Ã¢â ¬â œpresent). Andrew P. Conkey received his PhD from Texas A&M University (TAMU) in 2007, where his research was in the application of the fiber FabryÃ¢â ¬â œPerot interferometer to machinery/vibration measurements. He received his bachelorÃ¢â ¬â„¢s and masterÃ¢â ¬â„¢s degrees from TAMUÃ¢â ¬â œKingsville. He has over 16 years of teaching experience, having taught at TAMUÃ¢â ¬â œKingsville, TAMUÃ¢â ¬â œCollege Station, TAMUÃ¢â ¬â œQatar, and TAMUÃ¢â ¬â œCorpus Christi. In addition to teaching, he has worked for a refinery, a fiber-optic sensor company, and an engineering consulting firm.

This book is a highly valuable addition to the challenging subject of Dynamics. The book utilizes the differential equations of motion as the main tool to formulate, derive, analyze and predict the particle and rigid body planar motion. This approach is the only correct and reliable approach for studying dynamics, in contrast to the mainly geometrical and mostly algebra based approach, which does not lead to complete understanding, and more crucially, generalization of approach. The book is a valuable source for both the students and practicing engineers. The book has a large number of detailed solved examples and generous amount of practice problems, besides the concise theory for formulation of solutions.The study of dynamics needs a complete overhaul and innovation from the current practice in undergraduate studies which treats the dynamics problems at different instants of time to the one formulating the entire problem in a set of differential equations of motion which yields, as its solutions, the smooth functions of time, to better understand the system's behavior over a period of time and the evolution of motion. The textbook accomplishes this task admirably and shows the pathway for the study of dynamics at undergraduate level to be followed in future all around the world. As does the admirable textbooks written by James H. Williams (MIT)(Fundamentals of Applied Dynamics) and Analytical Dynamics (Haim Baruh).

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