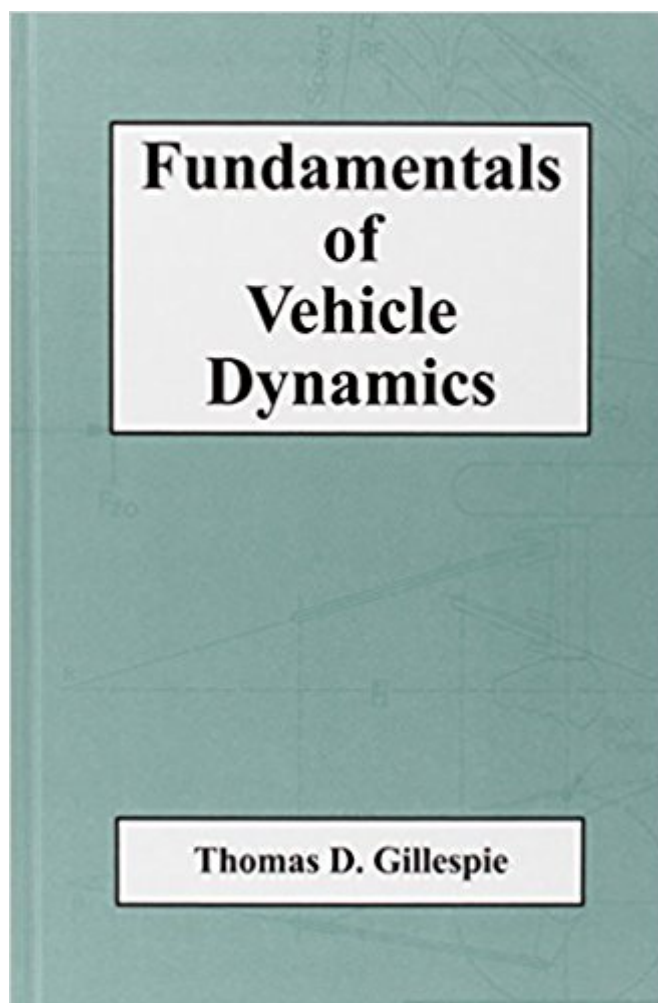


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# Fundamentals Of Vehicle Dynamics (R114) (Premiere Series Books)



## Synopsis

The first book providing comprehensive coverage of vehicle dynamics in a single volume, *Fundamentals of Vehicle Dynamics* provides a foundation of engineering principles and analytical methods to explain the performance of an automotive vehicle, with chapters focusing on: acceleration performance; braking performance; aerodynamics and rolling resistance; ride; tires; steady-state cornering; suspensions; steering systems; and rollover. Acceleration, braking, turning, and ride are among the most fundamental properties of a motor vehicle. To understand the vehicle as a system, it is necessary to acquire a knowledge of all these modes. Motion is the common denominator of all these modes; thus, the study of this field is denoted as vehicle dynamics. *Fundamentals of Vehicle Dynamics* introduces the basic mechanics governing vehicle performance, and familiarizes the reader with analytical methods and terminology. This book attempts to find a middle ground by balancing engineering principles and equations of use to every automotive engineer with practical explanations of the mechanics involved, so that those without a formal engineering degree can still comprehend and use most of the principles discussed. *Fundamentals of Vehicle Dynamics* provides thorough coverage of these subjects: Fundamental Approach to Modeling; Power-Limited Acceleration; Braking Forces; Anti-Lock Brake Systems; Aerodynamics; Rolling Resistance; Vehicle Response Properties; High-Speed Cornering; Independent Suspensions; Front Wheel Geometry; Transient Rollover; Dynamic Axle Loads; Traction-Limited Acceleration; Tire-Road Friction; Rear-Wheel Lockup; Drag; Total Road Loads; Vibration; Solid Axles; Roll Center Analysis; Front Wheel Drive; and Tire Construction. Either as an introductory text or a practical professional overview, *Fundamentals of Vehicle Dynamics* is an ideal reference on the forces and factors affecting the movements of a vehicle - accelerating, braking, ride, and turning.

## Book Information

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## Customer Reviews

"Fills the gap between popularized books with spare engineering content and the very theoretical books." -- Heavy Vehicle Systems  
"The absolutely definitive book on automotive suspensions... Accessible to the non-specialist." --Road & Track

Thomas D. Gillespie, Ph.D., a Research Scientist at the University of Michigan Transportation Research Institute, has taught courses on vehicle dynamics and automotive engineering at the University of Michigan. He also teaches vehicle dynamics courses at automotive manufacturers and suppliers. In 1987-88, he served on the White House staff as a Senior Policy Analyst in the Office of Science and Technology Policy. He later served as a consultant to the White House and chaired the Interagency Task Force to develop a National Action Plan on Advanced Superconductivity Research and Development. He is currently the Director of the Great Lakes Center for Truck Transportation Research.

Good seller and product. Just as expected.

My background is in computer engineering. As such, I have a basic understanding of kinematics, but approached this book with little knowledge of physics as specifically applied to vehicles. I found this book to be a perfect first step into the field. It picked up essentially where my knowledge left off and provided solid coverage of the topics discussed. Due to the nature of the book--an introductory text--simplifications often had to be made; in these cases the simplifications were pointed out, often with references to publications covering the areas more fully. Furthermore, I felt that all topics were evenly covered--no one got undue attention. Basically, the book was just what I was looking for. My only significant pet peeves are the use of English-system measurements (I am more comfortable with metric), and a few cases of unexplained 'magic numbers' in formulas (it took me a minute to realize that 57.3 is the number of degrees in a radian). And plot and character development were pretty thin (grin).

The bible of vehicle dynamics

This is an excellent book for the basics of vehicle dynamics. It covers the main topics in a straightforward, easy to understand way and has good examples. The only thing preventing a 5 star rating is that the book is a little dated having been written in the late 1980's. Some of the references therefore need to be updated.

If you are into equations, knock yourself out, this book has a lot of them, and for me, it explains them enough to understand them. I had to remember my days at the university, but it has definitely what I was looking for. I guess is a must for anyone trying to build a car seriously

This book is very important for the vehicle dynamics studies. There are few books relating to this and the Gillespie's book is the start, but it's necessary for more specific studies.

For my vehicle dynamics class at the University of Central Florida we are using this book. The author is good at explaining topics and the examples have real world implications. However, there are nowhere near enough examples in this book, nor are there any problem sets for practice. This is a fine book to develop an idea of vehicle dynamics, but I do not think it is sufficient to be used as a course text book. Chapter 5 could be much better organized it seems when reading it as well.

I first have to say I am surprised that I am the only one to give this book such a poor rating. From a "reading for leisure" standpoint, this book explains the basic concepts of vehicle dynamics pretty well; however, as a engineering book (from SAE no less), this is probably one of the worst books I have ever purchased in my entire educational and professional career. As one of the reviews mentioned, the "unexplained 'magic numbers' in formulas" take time to get used to. I am not one to just accept formulas as is. As a graduate student, I like to know some thought behind the formulas I am using. In addition to the 'magic numbers', the author poorly explains many formulas. As an example, the author does not explain whether the sprung weight or total weight should be used when determining steady-state cornering. In all the formulas, the total weight is used; however, when determining changes due to body roll, only the sprung weight should be taking into account. Since unsprung weight only accounts for 5% of the total weight, maybe the author decided that was "close enough"

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