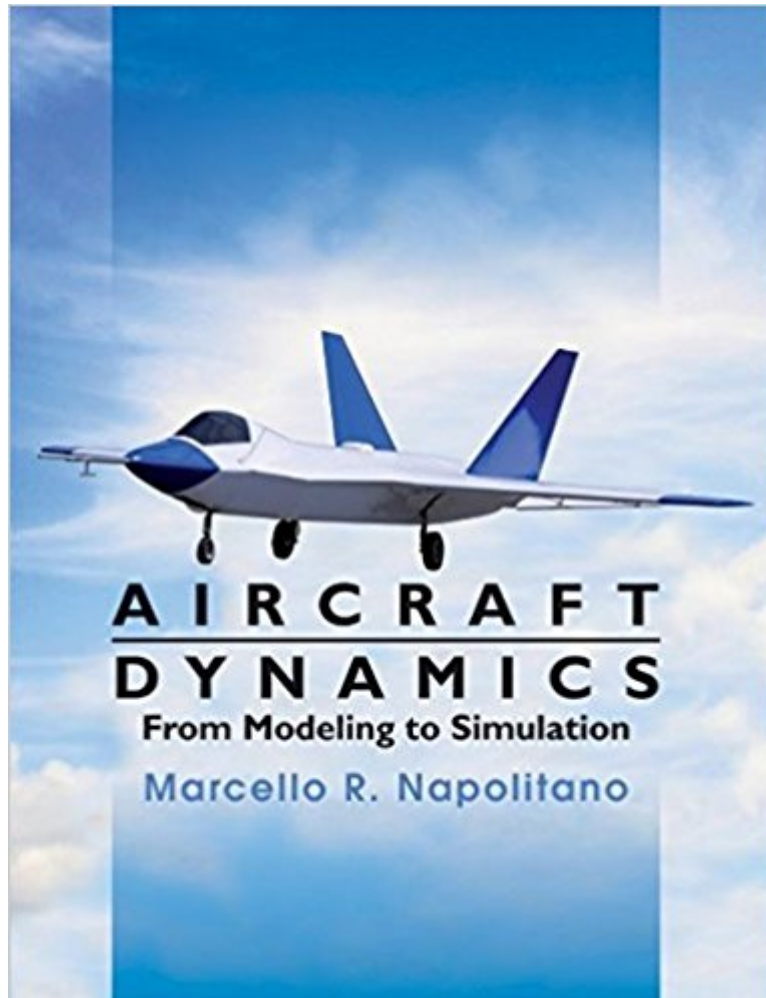




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# Aircraft Dynamics: From Modeling To Simulation



## Synopsis

Napolitano's Aircraft Dynamics is designed to help readers extrapolate from low level formulas, equations, and details to high level comprehensive views of the main concepts. The text also helps readers with fundamental skills of learning the "basic modeling" of the aircraft aerodynamics and dynamics. The main objective is to organize the topics in "modular blocks" each of them leading to the understanding of the inner mechanisms of the aircraft aerodynamics and dynamics, eventually leading to the development of simple flight simulations schemes.

## Book Information

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## Customer Reviews

If you like Roskam's " Airplane Flight Dynamics and Automatic Flight Controls - Part 1", but would like something with nicer appearance and a bit broader strokes, you will like this text. I'm using it for a course I'm teaching for undergrads and graduate students. It starts with force and moment equation dynamics and reference frames, decouples longitudinal and lateral-directional EOM, uses a DATCOM style approach to build up non-dimensional aero coefficients, includes thrust effects, has a nice overview of some performance, has a good chapter on trim, and includes dimensional EOM and some controls. On the negative side - it has lots of errors. It is a nice addition to the library of flight dynamics texts - but the number of errors is larger than one would like.

Book is full of errors everyone in my class hated trying to figure out what was correct and what wasnt in this book

Worst book I've had in my 4 years in engin school. So many calculation errors and other mistakes.

Great book perfect for my flight dynamic class

The author did a great job keeping together both the theoretical and the practical aspects of flight/aerodynamic modelling. Well known formulations from classical textbooks on flight dynamics are revisited in this book and made clear with the aid of a number of nicely formatted graphs. The theory is supported with many worked out examples based on detailed aircraft drawing and data tables. A unique feature of this book is that it contains data of so many different airplanes, ranging from military jets, to commercial turbofans, to general aviation propeller aircraft. The simulation is covered by introducing a well tested Matlab/Simulink library downloadable from the Matlab File Exchange website. The basic concepts of flight dynamics are presented and discussed with the aid of this simulation tool. The book has an unusual large layout that facilitates the reader in navigating through the many drawings, plots, and tables.

This book is a very useful guidelines to perform aircraft simulation both for beginner and andvanced user. The aircraft dynamics theoretical formulation is reported in an easy and clear way and, even more important, very well related with the modeling process. The most relevant features of this book are the huge amount of aircraft data reported inside and the several sample applications built on purpose using matlab/simulink software environment. These features make the text very suitable for both teaching and as a reference in the design and implementation process of flight simulators.

Napolitano's book discusses effectively the key concepts of the flight dynamics and explains in detail how to carry out aircraft flight dynamics simulations. Theoretical aspects (aircraft equations of motion, modeling of aerodynamic and propulsive actions, solution of aircraft dynamics) are supported with a lot of examples and expressed using simple language. Practical aspects are discussed with the aid of applications of Matlab and Simulink tools. I consider the book a great textbook for a flight dynamics course.

This book is a very useful reference point, for both researchers and designers interested in aircraft modeling and simulation. It allows all the aerodynamic derivatives necessary for the definition of the dynamics of aircraft to be defined and therefore helps one understand on which parameters it is

necessary to intervene in order to adapt the response characteristics to the specific requirements. In the book, the theoretical aspect is well balanced with the practical and applicative one.

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