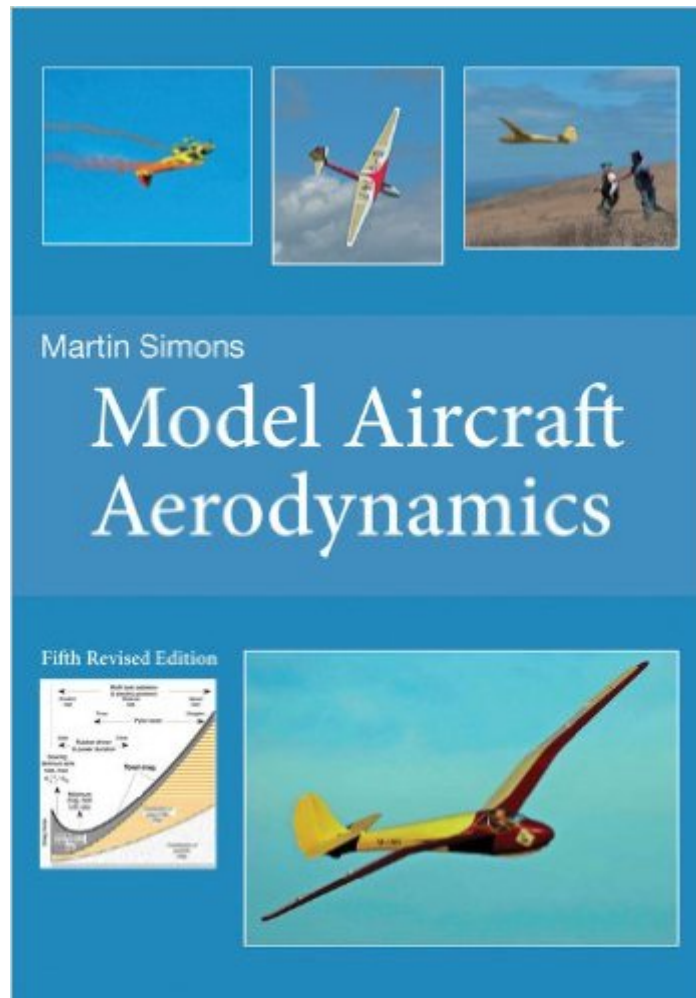


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# Model Aircraft Aerodynamics



## Synopsis

This is the latest edition - fully revised and updated - of the standard textbook on aerodynamic theory, as applied to model flight. Everything is explained in a concise and practical form for those enthusiasts who appreciate that a better understanding of model behaviour is the sure path to greater success and enjoyment, whether just for fun or in competition. The revisions for this new edition reflect the significant developments in model aircraft during the last few years, and include brand new data: - The chapter on aerofoils has been rewritten to take account of the vast amount of testing carried out recently in the USA by the University of Illinois. - A brand new chapter explains the latest research into the flight of birds and insects and how it is applied to small drones and model-sized surveillance aircraft. - Older wind tunnel test reports all replaced with the latest trials and measurements.

## Book Information

Paperback: 270 pages

Publisher: Trans-Atlantic Publications; 5 edition (May 28, 2015)

Language: English

ISBN-10: 1854862707

ISBN-13: 978-1854862709

Product Dimensions: 0.8 x 7.8 x 9.5 inches

Shipping Weight: 12.6 ounces (View shipping rates and policies)

Average Customer Review: 4.5 out of 5 stars [See all reviews](#) (39 customer reviews)

Best Sellers Rank: #412,378 in Books (See Top 100 in Books) #37 in [Books > Engineering & Transportation > Engineering > Aerospace > Aerodynamics](#) #219 in [Books > Textbooks > Engineering > Aeronautical Engineering](#) #238 in [Books > Crafts, Hobbies & Home > Crafts & Hobbies > Toys & Models > Models](#)

## Customer Reviews

As a professional aerospace engineer, I am often disappointed by books and articles written for amateurs and hobbyists. This book is a rare exception in that it is accurate, understandable and well laid out. The very low Reynolds number conditions that model aircraft fly in are sufficiently different from full scale that most engineers don't really understand what is going on. This book led me through unfamiliar territory and gave me a much fuller appreciation for the aerodynamics I encountered in very-high-altitude and planetary flight.

Even though its focus is models, this book is a great inexpensive companion to the far more costly textbooks on full-scale airplane design. A lot of its discussion is applicable to aircraft of any scale. About 1/3 of the book is devoted to airfoils, including discussions of section shape, camber, turbulent flow, laminar flow and the impact of Reynolds number. Like the other reviewer I particularly like the appendixes which cover almost 130 pages of this book. The appendixes contain most of the math in the book, including the mathematical formulas for computing lift coefficient, camber, drag, static margin, etc. Mostly, though, they contain wind tunnel test results and profile shapes for many airfoils, not just the NACA ones, but also Eppler, Wortmann and Selig profiles and a few others that I had never heard of. The NACA profiles are easy to find (like in 'Theory of Wing Sections') but it's nice to see such an extensive list of the harder-to-find profiles as well.

This is without a doubt the most useful book in my library and is a "must have" for any serious modeler. It not only gives the basics that any modeler should be able to understand but backs the concepts up with some basic math to prove the points. In addition, Martin has used the metric SI system of units which makes everything much easier to understand.

This is an excellent book, applicable to much more than model aircraft. Most of its material is applicable to full size sailplanes and aircraft also. The book is not heavily mathematical, and chapters start with basic fundamentals and build from there. Significant prior knowledge is not required, but helpful. I actually bought the book after reading a copy of a friend's. I was pleasantly surprised to find that the later edition that I bought had more material in the same down to earth style as the first. Great book.

Model aircraft aerodynamics is a delightfully well-written book about a topic which is perhaps not so easily understood by the majority of model builders. Concentrating on airfoil performance, Simons' book is a densely packed source of information on nearly every detail one could possibly wish to know about the principles behind airplane lift. The book devotes several chapters to the presentation and explanation of wind tunnel experiments, as well as an in-depth discussion about the possible limitations of such results, together with historical notes and references. Furthermore, by calculated examples, Simons shows the reader how aerodynamic data are put to good use in the design of a real flying device. Some of the test results presented in the book are produced in cooperation with modelers in order to ensure the usefulness of the outcome. Other topics like Reynolds number and special details concerning propellers are of course also found. A very good

choice of book for someone who wants to get a flying start into the secrets of wings.

I have recently studied the 2009 edition. First, I confess prejudice, since he references my work on airfoils. But this is a truly excellent volume, well written, well illustrated, virtually without equations and correct in every respect. I could not find a single item that was wrong, or even required more precise expression. I expect that readers who do not have college aerodynamics may find it a little abstruse. But the truth is seldom simple. Most of the reviews give good, useful descriptions of the content. It is a pity that one reviewer was so totally ignorant as to knock the book because it "used Bernoulli for airfoil lift"!! The book he quotes as a basis for this nonsense is actually incorrect, and is widely known as a joke in the professional business. It is sad how definite fools may be. And how harmful!

The book is, to me, hard to read because there is little to no "scenery" in the book. Every sentence is packed with information which results in a slow read particular for a newcomer to the field of aerodynamics like myself. Inevitably, every page is filled with "Why didn't I think of that" - type revelations. Don't rush into the book. Take it a page at a time because the pace builds up quickly - particularly in the first few chapters. If you don't understand a chapter, you will waste your time on the next. A Book for the patient, but eager to learn. Martin Simons is an expert in his field and in this conversational, intense, book his knowledge is shared well. Definitely the pride of my library.

Having designed my own uniquely different model aircraft (spans of 2-3 meters), I found this book to be indispensable. The explanations of forces and the effects of many different design factors was superb. The appendix 3 (with nearly 200 different aerofoils alone!) is worth the price. For anyone who designs or just flies Model Aircraft, this book will allow you to understand how and why Aircraft fly, which will make you a better 'Pilot' and/or designer.

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