

Personal Bibliography

2019-01-04

Abbott, Ira H., and von Doenhoff, Albert E., "Theory of Wing Sections", Dover Publications, 1958.

Not much theory is here, but this book is the distillation of almost all information on wing sections in the US prior to the development of supercritical airfoils.

Abbott, Ira H., von Doenhoff, Albert E., and Stivers, Louis S. "Summary of Airfoil Data", National Advisory Committee for Aeronautics, NACA Report 824, 1945.

Much of the data in "Theory of Wing Sections" was originally published in this report.

Allen, Ned (Editor) "AIAA Aerospace Design Engineers Guide, Sixth Edition", AIAA, 2012.

Useful reference book covering materials, structures, mechanical design, electrical/electronic design, aircraft design and performance, propulsion, etc.

Anderson, Fred, "Northrop, An Aeronautical History", Northrop Corporation, 1976.

Valuable history of Northrop Aircraft.

Anderson, John D., "Fundamentals of Aerodynamics, Fourth Edition", McGraw Hill, 2005.

A fifth edition is available. The book is a lot more rigorous than is required for most designers. Detailed treatment of viscous flows is not addressed until three-quarters of the way through the book. Be prepared for some heavy reading.

Anon, "Innovation with Purpose, Lockheed Martin's First 100 Years" Lockheed Martin, 2013.

In trying to cover a vast amount of material, this book is of necessity somewhat superficial concerning individual design projects. Good to have as a coffee-table browser.

Anon, "Jet Transport Performance Methods", Boeing Flight Operations Engineering, Report D6-1420, 1989.

Although published for internal use at Boeing, it has been distributed widely and is not proprietary.

Anon, "Pilot's Handbook of Aeronautical Knowledge", Federal Aviation Administration, AC-61-23B, 1980 (or later).

Fundamental book on light aircraft flight operations.

Anon, "Pilot's Weight and Balance Handbook", Federal Aviation Administration, AC 91-23A, 1977.

The title says it all.

Aronstein, David C., Hirschberg, Michael J., and Piccirillo, Albert C., "F-22 Raptor, Origins of the 21st Century Air Dominance Fighter", AIAA, 1998.

Interesting and important history of the long and drawn-out development of the F-22.

Ashley, Holt, and Landahl, Marten, "Aerodynamics of Wings and Bodies", Dover Publications, 1965.

Both Ashley and Landahl taught at MIT (before Holt Ashley moved to Stanford). A bit technical for the average reader, but if you need to understand slender body theory, this is the book.

Augustine, Norman R., "Augustine's Laws", AIAA, 1983.

Interesting and irreverent guide to the U.S. defense acquisition process. This book has become a classic. Amongst other notable responsibilities, Augustine was chairman of Lockheed Martin.

Austin, Reg, "Unmanned Aircraft Systems, UAVS Design, Development and Deployment", AIAA, 2010.

Contains a lot of useful information on the practical aspects of UAV operation, but is weak on design. For the UAV designer, Gundlach's book is much better.

Badrocke, Mike, and Gunston, Bill, "Lockheed Aircraft Cutaways", Barnes & Noble, 2001.

Useful summary of cutaways of typical aircraft. Helpful for students to learn about aircraft layouts.

Bilstein, Roger E., "Orders of Magnitude, A History of the NACA and NASA 1915-1990", National Aeronautics and Space Administration, NASA SP-4406, 1989.

Brief, but interesting and useful.

Boyne, Walter J., "Beyond the Horizons: The Lockheed Story", St. Martin's Press, 1998.

Comprehensive history of Lockheed and sycophantic homage to Lockheed's leadership. According to the author, Lockheed senior management never made a mistake.

Brandt, Stephen A., Stiles, Randall J., Bertin, John J., and Whitford, Ray, "Introduction to Aeronautics: A Design Perspective, Second Edition", AIAA, 2004.

Excellent overview of design processes, covering the most important aspects of aircraft design and performance for the college student and practicing engineer. Any book authored or co-authored by Ray is worth buying.

Cacutt, L. (Ed.), "Great Aircraft of the World", Chartwell Books, 1992.

A good book to browse on a rainy afternoon. It has good pictures and cutaway drawings.

Campbell, James, and Chambers, Joseph, "Patterns in the Sky", National Aeronautics and Space Administration, NASA SP-514, 1994.

Fascinating book on flow visualization, providing useful insights as to how air flows around aircraft in flight.

Chambers, Joseph, "Partners in Freedom", National Aeronautics and Space Administration, NASA SP-2000-4519, 2000.

Contributions of the Langley Research Center to US military aircraft of the 1990s. Joe has been a NASA engineer and manager for many years.

Corke, Thomas C., "Design of Aircraft", Prentice-Hall, 2002.

Used as a textbook at several universities in India, but the book is very weak on design processes, and fails to emphasize what is important and what is not. Occasionally the terminology is wrong. This is not recommended as a college textbook.

Corning, Gerald, "Supersonic and Subsonic, CTOL and VTOL, Airplane Design", 4th Edition, Gerald Corning (Publisher), 1976.

This has been used in some design courses, but it's difficult to follow design processes, and weak on basic procedures, such as determining TOGW to perform a defined mission. Contains some useful data, but much of it out of date.

Covert, Eugene (Ed.), "Thrust and Drag: Its Prediction and Verification", Vol. 98 Progress in Astronautics and Aeronautics, AIAA, 1988.

Somewhat specialized information for the propulsion engineer. Dr. Covert has a great wit, but unfortunately there is no opportunity to show it here.

Crawford, Donald, "A Practical Guide to Airplane Performance and Design", Crawford Aviation, 1981.

This book is for the home-built aircraft designer, and contains basic information on design and performance of light aircraft.

Currey, Norman, "Aircraft Landing Gear Design: Principles and Practices", AIAA Education Series, 1988.

Norm worked at Lockheed in Marietta for many years, and this is the standard text for transport aircraft landing gear. Lockheed published a larger-format edition with additional appendices, but it's hard to find.

Dabney, Joseph E., "Herk, Hero of the Skies", Larlin Corporation, 1986.

An unofficial history of the Lockheed C-130 Hercules. Interesting reading.

Davis, D.P. "Handling the Big Jets", Air Registration Board (UK), 1968.

The significant differences in flying qualities between jet transport aircraft and piston-engine aircraft. Intended for the pilot transitioning into jets, it contains useful information on high-speed aircraft handling problems. Later editions have been updated.

Dole, Charles E., "Flight Theory for Pilots", Charles Dole (Publisher), 1987.
Simple flight theory used in certain USAF courses related to flight safety and accident investigation.

Ellison, A.P., and Stafford, E.M., "The Dynamics of the Civil Aviation Industry", Saxon House, 1974.
Written prior to the Airline Deregulation Act of 1978, so this book is now outdated, although it contains important information on how the commercial aircraft acquisition process works.

Goldstein, S. (Ed.), "Modern Developments in Fluid Dynamics", Two Volumes, Dover Publications, 1965.
An account of theory and experiment relating to boundary layers, turbulent motion and wakes. Mostly of historical interest, but the laws of aerodynamics haven't changed.

Gray, Robert, "Rolls on the Rocks", Panther Books, 1971
History of Rolls-Royce, concentrating on the technical and financial mismanagement of the RB.211 program that led to the bankruptcy of the company in 1971.

Green, W., Swanborough, G., and Mowinski, J., "Modern Commercial Aircraft", Portland House, 1987.
This book is also a bit out of date, but has good data and cutaway drawings of commercial aircraft. A more recent edition is probably available.

Gundlach, Jay, "Designing Unmanned Aircraft Systems, A Comprehensive Approach", AIAA, 2012.
This is the best book available on unmanned aircraft design.

Gunston, Bill (Ed.), "The Encyclopedia of World Air Power", Crescent Books, 1981.
No cutaways, but plenty of color three-views. Useful for getting dimensions of existing aircraft.

Fielding, John F., "Introduction to Aircraft Design, Second Edition", Cambridge University Press, 2017.
This book contains a great deal of useful information, but is weak on the design process. There is nothing on the procedure for calculating the airplane takeoff gross weight to meet a specified payload-range requirement. This is a follow-on to Howe's book, but it has the same weaknesses.

Francillon, Rene F., "Lockheed Aircraft since 1913", Putnam, 1987.
A definitive history of Lockheed aircraft.

Heinemann, Ed, and Rausa, Rosario, "Ed Heinemann, Combat Aircraft Designer", Naval Institute Press, 1980.

The personal history of an air combat designer. Interesting reading.

Hoerner, S.F., "Fluid-Dynamic Drag", Hoerner Fluid Dynamics, 1965.

This book is on the bookshelf of every applied aerodynamicist and aircraft designer.

Hoerner, S.F, and Borst, H.V., "Fluid-Dynamic Lift" Hoerner Fluid Dynamics, 1985.

Like Hoerner's classic book on drag, this is an essential book for applied aerodynamicists and designers.

Howe, Denis, "Aircraft Conceptual Design Synthesis", Professional Engineering Publishing, 2000.

There's a lot of good information, but the book is weak on the design process. In particular, it doesn't clearly describe the procedure for calculating the takeoff gross weight to perform a defined payload-range requirement.

Huenecke, Klaus, "Modern Combat Aircraft Design", Naval Institute Press, 1987.

Useful information on combat aircraft. Published at the same time as Ray Whitford's book and covers similar material.

Hurt, H.H., "Aerodynamics for Naval Aviators", Office of Chief of Naval Operations, NAVWEPS 00-80T-80, Revised Jan 1965.

This book is still in print. A lot of simple explanations and useful figures on aerodynamics, performance, S&C, and loads.

Hygate, Barrie, "British Experimental Jet Aircraft", Argus Books, 1990.

Detailed scale drawings and development history of 41 prototypes. If you are interested in the prolific output of experimental aircraft in the UK in the period 1941-1986, this is great reading.

Irving, Clive, "Wide Body. The Triumph of the 747", William Morrow and Company, 1993.

A non-technical account of Boeing 747 development. A fascinating account of the personal aspects of building a large airplane.

Jenkinson, Lloyd R., Simpkin, Paul, and Rhodes, Darren, "Civil Jet Aircraft Design", AIAA 1999.

Some useful data, but procedures for estimating TOGW, T/W and W/S can easily lead to large errors.

Johnson, Clarence L., and Smith, Maggie, "Kelly, More Than My Share of It All", Smithsonian Institution Press, 1985.

A personal history of Kelly Johnson and the Lockheed Skunk Works. A bit thin on technical information. Ben Rich's book is better.

Jones, Robert T., and Cohen, Doris, "High Speed Wing Theory", Princeton University Press, 1960.

Out of print and hard to get hold of, this still contains the best summary of supersonic airflow around wings and bodies.

Jones, R.T., "Modern Subsonic Aerodynamics", Martin Hollman, 1988.

Brief summary of subsonic aerodynamics by one of the world's leading experts.

Kendall, Eric, "An Introduction to the Elements of Airplane Stability and Control", Dorrance Publishing, 2013.

A small book introducing stability and control to the college student in an easily-understood manner. Not sufficient as a stand-alone textbook for an S&C course, but contains essential information for a designer. Eric has a lifetime of experience in aircraft design, certification and operation, both in the UK and US.

Kolk, W. Richard, "Modern Flight Dynamics", Prentice-Hall, 1961.

For the advanced specialist in flight dynamics.

Kundu, Ajoy Kumar, "Aircraft Design", Cambridge University Press, 2010.

There's a lot of good information buried here, but you must dig quite deeply to find it, and it may not be where you expect it. Ajoy has a lifetime of experience as a designer and design manager in India, the US and UK, and currently teaches at Belfast University.

Küchemann, Dietrich, "The Aerodynamic Design of Aircraft", AIAA, 2012.

A classic book on aerodynamics and design. Originally published in 1978, this has been republished due to popular demand. Contains interesting perspectives on future trends in design and performance, some of which have not been fulfilled.

Lan, Edward C-T, "Applied Airfoil and Wing Theory", Cheng Chung Book Company, 1988.

This has rather more theory than application, and is of limited use to the average designer. Ed was at the University of Kansas.

Lan, Edward C-T, and Roskam, Jan, "Airplane Aerodynamics and Performance", Roskam Aviation and Engineering, 1981.

There's an updated edition with significant additions. This is another "must have" book for the performance engineer. Ed and Jan taught at the University of Kansas, a leading university for aerospace education.

Lennon, Andy, "Canard, A Revolution in Flight", Aviation Publishers, 1984.
Interesting photos and drawings of strange configurations.

Loftin, Laurence, "Quest for Performance: The Evolution of Modern Aircraft", National Aeronautics and Space Administration, NASA SP-468, 1985.
Not much technical data, but a useful history of aircraft evolution from a US perspective.

Loftin, Laurence, "Subsonic Aircraft: Evolution and the Matching of Size to Performance", NASA LaRC, Report N80-29245, 1980.
Much of the empirical performance data in Roskam's (and other authors') books were derived from this report.

Mallick, Donald L., "The Smell of Kerosene: A Test Pilot's Odyssey", NASA SP-4108.
A first-hand account of expanding the envelope of knowledge of flying many types of high-speed aircraft, including the XB-70 and SR-71.

Mangurian, G.N., and Johnson, N.M., "Aircraft Structural Analysis", Prentice Hall, 1947.
Undoubtedly outdated, but still useful.

Mansfield, Harold, "Vision, A Saga of the Sky", Madison Publishing Associates, Second Edition, 1986.
History of Boeing Aircraft.

McCormick, Barnes W., "Aerodynamics, Aeronautics, and Flight Mechanics", John Wiley, 1979.
Excellent undergraduate text book. Both text and graphics are of high quality.

McCormick, Barnes, W., "Aerodynamics of V/STOL Flight", Dover Publications, 1999.
Another well-written book by McCormick, this time in a specialized area.

McLean, Doug, "Understanding Aerodynamics, Arguing from the Real Physics", Wiley, 2013.
This is a thought-provoking book. Aerodynamicists need to be reminded that mathematical models are not physical models, and although they may approximate reality quite closely, they are not the same as physical reality. It's very easy to draw conclusions that are not supported by physics. McLean doesn't hesitate to tell aerodynamicists when they are wrong, which happens quite frequently.

Nicolai, Leland, and Carichner, Grant, "Fundamentals of Aircraft and Airship Design, Volume 1 - Aircraft Design", AIAA, 2011.
This is a revised and expanded edition of a standard textbook on aircraft design. All the graphics have been upgraded. Every aircraft designer or performance engineer should have a copy of this book. Both Lee and Grant have a lifetime of design experience, much of it at Lockheed Martin. Unfortunately little is written about laying out a configuration.

Nicolai, Leland, and Carichner, Grant, "Fundamentals of Aircraft and Airship Design, Volume 2 - Airship Design and Case Studies", AIAA, 2012.

Airship design is a somewhat specialized area, but this is valuable for those involved. The case studies cover a wide variety of aircraft types – some successful and some failures. The case studies alone are worth the purchase of this volume.

Nicolai, Leland, "Lessons Learned: A Guide to Improved Aircraft Design", AIAA, 2016.

These are lessons learned from a lifetime of managing aircraft design programs. This is not a technical book. It is a set of guidelines on all aspects of program management, from working with the customer, to the importance of having fun.

Niu, Michael C.Y., "Airframe Structural Design", Conmilit Press, 1988.

Mike Niu was a designer at Boeing in the 1960s, before moving to Lockheed in the 1970s and 80s. He has distilled many years of experience into this book. It's the best reference for the structural designer.

Niu, Michael C.Y., "Composite Airframe Structures", Conmilit Press, 1992.

A follow-on to Airframe Structural Design.

Obert, Ed, "Aerodynamic Design of Transport Aircraft", IOS Press, 2009.

Vitally important book for transport aircraft aerodynamicists. Contains detailed analysis of the aerodynamic development of many commercial airplanes.

Peery, David, "Aircraft Structures", McGraw-Hill, 1950.

Somewhat out of date, but still the bible for analysis of conventional aircraft structures.

Perkins, Courtland, and Hage, Robert, "Aircraft Performance, Stability and Control", John Wiley & Sons, 1949.

No information on jet aircraft performance and S&C, but Perkins & Hage is also the bible for S&C engineers.

Rae, William H., and Pope, Alan, "Low-Speed Wind Tunnel Testing, Second Edition", John Wiley and Sons, 1984.

A later edition is available, but this is probably the best version for the fundamentals.

Raymer, Daniel, R., "Aircraft Design: A Conceptual Approach", 6th Edition, AIAA, 2018.

First published in 1989, this has become the most popular textbook on aircraft design. Comprehensive, although a little weak on high-speed subsonic aerodynamics. It contains information on lofting, and some (but not enough) on laying out a configuration.

Raymer, Dan, "Simplified Aircraft Design for Homebuilders", Design Dimension Press, 2003.

Includes design spreadsheet. Weight equations are claimed to be valid for small aircraft.

Redding, Robert, and Yenne, Bill, "Boeing – Planemaker to the World", Crescent Books, 1983.

Interesting and well-illustrated history of Boeing.

Rich, Ben, and Janos, Leo, "Skunk Works", Little, Brown and Company, 1994.

Personal memoir of Ben Rich's time at the Lockheed Skunk Works. Easy reading, but useful information on aircraft design and development.

Richardson, Doug, "Stealth", Orion Books, 1989.

Deception, evasion and concealment in the air.

Roskam, Jan, "Airplane Design" Parts I through VIII, Roskam Aviation and Engineering Corp, 1985.

Trove of information for the student aircraft designer, and for the veterans. Design procedures are clearly described and enumerated. Unfortunately the series of books has not been updated, and some data are obsolete, but procedures are still valid.

Schaufele, Roger D., "The Elements of Aircraft Preliminary Design", Aries Publications, 2007.

Roger was the Project Aerodynamicist on the DC-8, DC-9, and DC-10, and became Vice President/General Manager of Commercial Aircraft Products at McDonnell Douglas. This book uses many examples of DC-9 design and performance, with excellent introductory material on aerodynamic characteristics of high-speed subsonic aircraft. But some procedures have been oversimplified, such as calculating the mission fuel fraction.

Shaw, Robert L., "Fighter Combat, Tactics and Maneuvering", United States Naval Institute, 1985.

Do you want to be a fighter pilot? This is probably the closest you will get.

Sforza, Pasquale M., "Commercial Airplane Design Principles", Elsevier, 2014.

The book contains useful data, but procedures often do not follow those used in industry, and will lead to errors. Little is written about meeting FAR Part 25 requirements, and nothing about FAR Part 121. There is nothing about structural layout or systems integration. The quality of graphics could do with improvement.

Shapiro, Ascher H. (Preface), "Illustrated Experiments in Fluid Mechanics", MIT Press, 1972.

Book to accompany the short films produced at MIT, Stanford, Princeton, and other universities in the 1970s. As Shakespeare said in Troilus and Cressida "Since things in motion sooner catch the eye than what not stirs". The films can be found on the web.

Shevell, Richard, "Fundamentals of Flight", Prentice Hall, 1983.

Dick Shevell was head of Commercial Advanced Design at Douglas Aircraft before retiring to teach at Stanford University. The book is clearly written and it has much useful information on the aerodynamics and performance of commercial aircraft, with several examples applying to the DC-10.

Stinton, Darrol, "The Anatomy of the Aeroplane", BSP Professional Books, 1985.
Many useful figures and fundamental information on aircraft design and performance, with pictures of interesting European conceptual designs.

Stinton, Darrol, "The Design of the Aeroplane", BSP Professional Books, 1983.
More useful information and unusual configurations.

Stratford, Alan H., "Air Transport Economics in the Supersonic Era", MacMillan, 1973.
Published prior to the Airline Deregulation Act of 1978, so this book is very much outdated, but still contains useful information on the basics of airline economics from a practical perspective.

Suhler, Paul A., "From Rainbow to Gusto", AIAA, 2009.
Like a spy novel that is hard to put down, this is exciting reading. It is a well-researched history of the development of low-observable and high-speed technologies that led to the SR-71.

Sutton, O.G. "The Science of Flight", Pelican Books, 1955.
Undoubtedly out of print, but if you find it, it's a gem of information on the history of flight.

Sweetman, Bill, "Stealth Aircraft, Secrets of Future Airpower", Airlife Publishing, 1986.
This book is a bit old, so it contains the history of stealth, rather than the future.

Sweetman, Bill, "Aurora. The Pentagon's Secret Hypersonic Spyplane", Motorbooks International, 1993.
Does this aircraft program exist? Those who know aren't saying.

Taylor, John W.R. (Ed.), "The Lore of Flight", Crescent Books, 1976.
Old and undoubtedly out of print, but it contains some nuggets of aircraft design data, such as landing gear and ECS systems.

Taylor, Michael, "The World's Strangest Aircraft", Barnes and Noble, 1996.
Fascinating accounts of the limits of aircraft design.

Thomas, Geoffrey, Norris, Guy, Creedy, Steve, Forbes Smith, Christine, "Plane Simple Truth, Clearing the air on aviation's environmental impact", Aerospace Technical Publications, 2008.

The list of authors contains some illustrious names in aerospace reporting. They endeavor to polish commercial aviation's somewhat tarnished image on environmental pollution and come across as cheerleaders rather than as impartial commentators.

Thwaites, Bryan (Ed.), "Incompressible Aerodynamics", Dover Publications, 1987.
Interesting summary of the state of knowledge of incompressible aerodynamics. Some useful figures.

Torenbeek, Egbert, "Advanced Aircraft Design", Wiley, 2013.
This is a major revision of his 1982 book, and although supporting data have been updated, there isn't as much as in the earlier work. Two chapters have been added on design optimization.

Torenbeek, Egbert, "Synthesis of Subsonic Airplane Design", Delft University Press, 1982.
This is the most comprehensive book on commercial aircraft design. If you ever find the large format version, buy it because it's much easier to read.

Von Kármán, Theodore, "Aerodynamics", McGraw-Hill, 1963.
Non-technical history of aerodynamics by one of the leaders in aerodynamic theory.

Wallace, Lane, "Flights of Discovery", National Aeronautics and Space Administration, NASA SP-4309, 1996.
50 years at the NASA Dryden Flight Research Center.

Wells, Alexander, "Air Transportation, A Management Perspective", Wadsworth Publishing Co., 1988.
A somewhat academic book on airline management.

Whitford, Ray, "Design for Air Combat", Jane's, 1987.
An essential book for designers of air combat aircraft, prior to the advent of stealth. Similar to Huenecke's book which was published at the same time (neither knew that the other was writing a book on the same subject until publication).

Whitford, Ray, "Evolution of the Airliner", Crowood Press, 2007.
Useful overview of technical advances in commercial aircraft design and operations. Good graphics and easily understandable text. Ray is excellent in explaining some difficult principles.