



Steady Aircraft Flight and Performance

By N. Harris McClamroch

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This undergraduate textbook offers a unique introduction to steady flight and performance for fixed-wing aircraft from a twenty-first-century flight systems perspective. Emphasizing the interplay between mathematics and engineering, it fully explains the fundamentals of aircraft flight and develops the basic algebraic equations needed to obtain the conditions for gliding flight, level flight, climbing and descending flight, and turning flight. It covers every aspect of flight performance, including maximum and minimum air speed, maximum climb rate, minimum turn radius, flight ceiling, maximum range, and maximum endurance.

Steady Aircraft Flight and Performance features in-depth case studies of an executive jet and a general aviation propeller-driven aircraft, and uses MATLAB to compute and illustrate numerous flight performance measures and flight envelopes for each. Requiring only sophomore-level calculus and physics, it also includes a section on translational flight dynamics that makes a clear connection between steady flight and flight dynamics, thereby providing a bridge to further study.

- Offers the best introduction to steady aircraft flight and performance
- Provides a comprehensive treatment of the full range of steady flight conditions
- Covers steady flight performance and flight envelopes, including maximum and minimum air speed, maximum climb rate, minimum turn radius, and flight ceiling
- Uses mathematics and engineering to explain aircraft flight
- Features case studies of actual aircraft, illustrated using MATLAB
- Seamlessly bridges steady flight and translational flight dynamics

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Steady Aircraft Flight and Performance By N. Harris McClamroch Bibliography

- Sales Rank: #2013193 in Books
- Published on: 2011-01-23
- Original language: English
- Number of items: 1
- Dimensions: 10.00" h x 1.10" w x 7.00" l, 2.20 pounds
- Binding: Hardcover
- 416 pages

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Editorial Review

From the Back Cover

"Steady Aircraft Flight and Performance is very well written, and it contains many useful figures and illustrations. The level of presentation is readily accessible to its intended audience--undergraduate students in aerospace engineering--and the numerous examples and problems help solidify the concepts presented in the book. MATLAB code is included for many problems, facilitating the transition from concepts to computation."--**Robert F. Stengel, Princeton University**

"This book is right on the mark. McClamroch's theoretical developments are, as usual, very rigorous and detailed."--**Eric Feron, Georgia Institute of Technology**

About the Author

N. Harris McClamroch is professor of aerospace engineering at the University of Michigan. He has been an educator and researcher in flight dynamics and control for more than forty years.

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Michael Campbell:

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