

of flight. Subsequent chapters describe the aerodynamic forces, and engine performance – it is also good to see some attention has been given to electric propulsion.

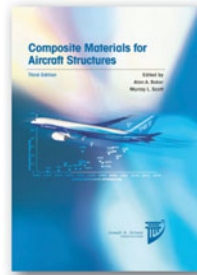
The later chapters use the equations of motion to determine the performance of an aircraft as it undertakes different manoeuvres including straight and level flight, climb and descent, take-off and landing, and lastly, turning performance and flight manoeuvres. There is then a final chapter on using numerical methods (as implemented and demonstrated in MATLAB) to analyse aircraft performance.

The level of detail in the book is impressive and the content of the earlier chapters most likely extends beyond what is taught in university courses on aircraft performance; it goes into the realms of aerodynamics, propulsion and aircraft design and shows how these disciplines are so closely connected.

The content in the later chapters is equally thorough, with sections describing the effect of headwind and runway slope on take-off being examples of this. The number of example questions with worked solutions is significant and will be of use to undergraduate students taking aircraft performance courses. The breadth of the book would also provide an excellent foundation for Masters level Aeronautics students from other engineering disciplines wanting to get up to speed with aircraft performance and aeronautics specific content more generally. The appendices include performance data on a range of aircraft, and most interestingly, an appendix on 'Flight Records', which includes some fascinating data.

The book is certainly comprehensive, with extensive examples, problems at the end of each chapter and MATLAB codes.

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Composite Materials for Aircraft Structures – 3rd Edition

**Edited by A. A. Baker
and M. L. Scott**

American Institute of Aeronautics and Astronautics, Reston, VA, USA. 2016.
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Over the last 50 years, carbon fibre-reinforced composites have evolved from small specimens in the laboratories of the Royal Aircraft Establishment (RAE) in Farnborough into primary aircraft structures of large civil aircraft such as the Airbus A350 and Boeing 787. During

this time, many textbooks on composite materials have emerged, helping to educate several generations of aircraft designers and aeronautical engineers. Some of these books stood the test of time and are now entering into their third editions. *Composite Materials for Aircraft Structures* is one of these few. Its first edition was published in 1986, second in 2004 and the third in 2016.

Two things make this book remarkable. Firstly, the book is focused on aircraft structures and everything an engineer needs to know about composites and all that they are made of, from fibre and matrix properties, manufacturing, quality control and fundamentals of mechanics of composite materials to joining, damage detection and repair. Secondly, unlike other textbooks, this one is written not by a single author or a pair of co-authors, but by a large team of contributors from many universities and research institutions, predominantly from Australia, but also from Malaysia and USA. It is to the editors' great credit that the book does not feel like a patchwork of separate chapters but a volume that speaks with one voice and reflects a shared vision underpinned by vast theoretical knowledge and practical expertise of the team.

The book is generously illustrated with figures, photographs, diagrams and tables that support discussion and aid understanding of various points in the text. It is great as a reference work, but for a textbook to be used in teaching of university students, it does not have many examples or problems to solve. Although one could argue that they are not really necessary in a volume that is already 600 pages long, since students could be referred to other excellent textbooks around for suitable exercises.

Another thing is missing from the book – a chapter on recycling. With composite structures being used so extensively nowadays, a question of what happens to them after they reach the end of their service life should be considered and discussed. Something for the fourth edition, perhaps?

Professor Maria Kashtalyan
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Practical Methods for Aircraft and Rotorcraft Flight Control Design: An Optimization-Based Approach

M. B. Tischler et al.

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