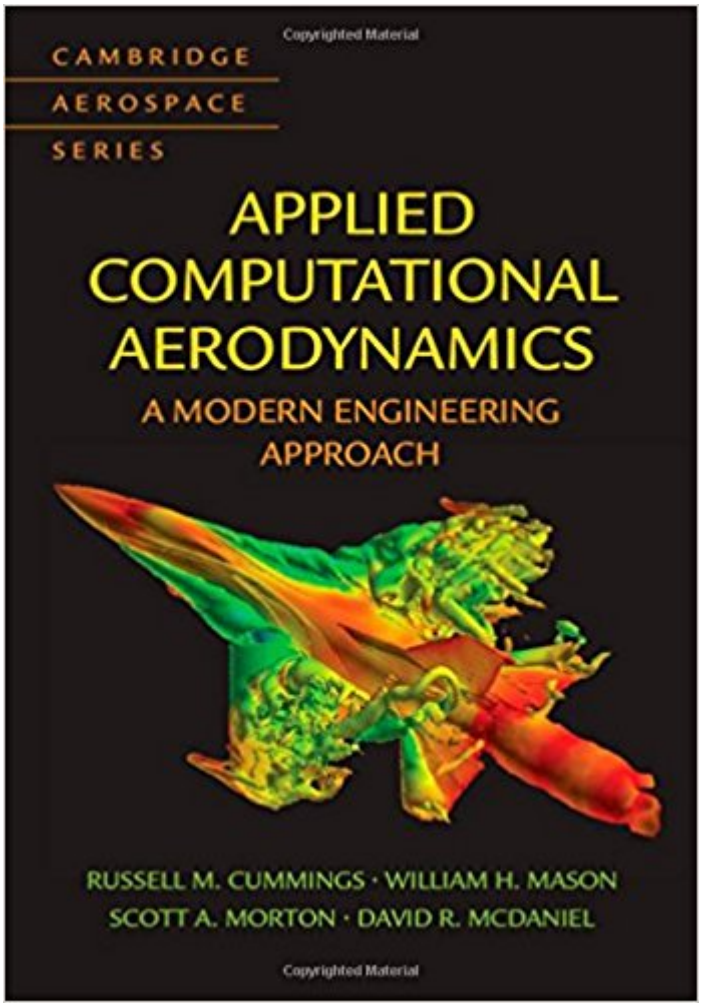
Applied Computational Aerodynamics: A Modern Engineering Approach (Cambridge Aerospace Series)



Synopsis

This computational aerodynamics textbook is written at the undergraduate level, based on years of teaching focused on developing the engineering skills required to become an intelligent user of aerodynamic codes. This is done by taking advantage of CA codes that are now available and doing projects to learn the basic numerical and aerodynamic concepts required. This book includes a number of unique features to make studying computational aerodynamics more enjoyable. These include: â ¢ The computer programs used in the book's projects are all open source and accessible to students and practicing engineers alike on the book's website, www.cambridge.org/aerodynamics. The site includes access to images, movies, programs, and more â ¢ The computational aerodynamics concepts are given relevance by CA Concept Boxes integrated into the chapters to provide realistic asides to the concepts â ¢ Readers can see fluids in motion with the Flow Visualization Boxes carefully integrated into the text.

Book Information

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Customer Reviews

"Based on the authors' teaching and research experience, they have succeeded in composing a volume for students in aeronautical and aerospace engineering by including a number of unique features to enthuse the readers. ... I strongly recommend this textbook for aeronautical or aerospace students at either undergraduate or postgraduate level. Aerospace engineers/researchers will also find it useful as a handbook. This comprehensive volume can be

used by those with little background in fluid mechanics, aerodynamics or CFD as a self-contained learning material." Ning Qin, The Aeronautical Journal

This CA textbook is written at the undergraduate level focuses on developing the student's engineering skills required to become an intelligent user of aerodynamic simulations codes, unlike available books which typically focus on writing codes. This is done by taking advantage of CA codes that are now freely available and doing projects to learn the basic numerical and aerodynamic concepts.

Terrible E-book product. The text is not optimized for digital displays, the content of a single page in the actual book is spread over many pages on both desktop and mobile platforms. This makes the product impossible to use for studying, and very disappointing. I have a physical copy, the kindle version is a completely different product which will hinder your learning. I would argue that the kindle version should not be sold, as it is costs me time and effort to simply find the material I am attempting to study. The content of the textbook is great, the format (kindle version) and delivery is awful.

As a cfd user or developer, it can help grasp picture of cfd developement.Prosper references might help to find detailed information of each models and programs. But it do not provide application method or programing.

The book gets 2 stars because it is fairly easy to read. The description is somewhat misleading with respect to software. It advertises open source software, but a few Matlab scripts does not constitute open source software. The other software are trial versions of proprietary programs with preprogrammed examples, i.e. the reader does not have the opportunity to "play" with unique test cases.I do not recommend if you want to learn about CA

This is a great book for users of computational aerodynamics. The authors provide balanced comparisons of a broad range of prediction methods, ranging from conceptual design to preliminary design to detailed design. They also provide valuable guidelines and best practices for using computational methods. An example is the danger of Garbage In/Garbage Out (GIGO) in blindly using computer programs. The book stresses the importance of verification and validation of computational aerodynamics, including comparisons of results from different prediction methods

and comparisons of predictions with experimental data. The aerospace design and analysis community needs more books like this one for the other technical areas.

I used this as the recommended (not mandatory) text for an introductory, applied (very applied) CFD course at Cal Poly San Luis Obispo. Several students purchased it and read it avidly - we used it as a general reference for digging a little deeper into the "black box". To be clear, this is a book clearly aimed at those new-ish to CFD and is perfect for the undergraduate taking a course or two in computational aerodynamics as it covers both simpler (and older) techniques as well as what most of us think of as industrial CFD in RANS (and some LES/DES). The descriptions of why things are the way they are are good and accessible, with an appropriate level of mathematical rigor while not being nearly as dense and off-putting as some of the more traditional CFD texts. The wealth of examples are useful for getting students thinking about what their results can look like, and the profiles of CFD researchers and developers is a nice touch that helps personalize some of the big names in CFD and CFD education, as well as showing the diversity of careers possible in CFD even if largely limited to the aerospace industry. It is obviously aimed at the aerospace industry, however a future version may benefit from expanding slightly into some related areas which are really only touched on, as the general content is actually fine for courses that might also be taught in Mechanical and Civil arenas and it wouldn’t take too many additional examples to help that feel relevant for wind engineers in general.Overall I was pleased that the author team took the time to write for their intended audience and not just cram it full of the stuff that seems to be accepted as "the stuff you have to know about CFD", which is often woefully misjudged for students learning about computational aerodynamics for the first time. This is a very substantial book and as the students had already learned about aerodynamics and matlab-able potential flow/lifitng line theory, we skipped the first few chapters but it would be a nice catch-all for approximately 2 or even 3 courses in this area.I must admit we are fortunate to have plenty of software options available to us and our students, so we did not make use of some of the code/examples that are sprinkled throughout. If teaching CFD to an undergraduate population, I would highly recommend a modest investment in commercial software that is well-documented, with a user-friendly GUI, as the students will find it much easier to get started and get excited, after which they can delve further into the theory and the mechanics of it all - having them flail around feeling like a cold war hacker to solve problems is, in my experience, inauthentic of the industry we’re preparing them for, and a sure-fire way to induce boredom and frustration. ANSYS or CD-Adapco, for instance, will often happily provide Formula SAE or AIAA DBF teams with licenses as sponsorship, and several other

packages are competitive to the point of now costing less than a decent desktop on which to run them - for universities without established CFD infrastructure and expertise, this is probably the route to go down rather than relying on bits and pieces from the book which, while potentially useful, are probably more of a "bonus" item that would be particularly useful for the student who otherwise has little or no access to resources (which in this day and age means they are somehow sitting around with either a serious conscience or no internet connection...!).

A groundbreaking work for the community of teaching and learning of CA. Look forward to tapping into the online resources.