

A Course in Mathematical Methods for Physicists

By Russell L. Herman

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Based on the author's junior-level undergraduate course, this introductory textbook is designed for a course in mathematical physics. Focusing on the physics of oscillations and waves, **A Course in Mathematical Methods for Physicists** helps students understand the mathematical techniques needed for their future studies in physics. It takes a bottom-up approach that emphasizes physical applications of the mathematics.

The book offers:

- A quick review of mathematical prerequisites, proceeding to applications of differential equations and linear algebra
- Classroom-tested explanations of complex and Fourier analysis for trigonometric and special functions
- Coverage of vector analysis and curvilinear coordinates for solving higher dimensional problems
- Sections on nonlinear dynamics, variational calculus, numerical solutions of differential equations, and Green's functions

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Editorial Review

Review

"… a welcome and refreshing addition to a rich body of literature. … should fit into the sophomore or junior year of a typical physics undergraduate curriculum. … Engineers and chemistry majors, too, would benefit from taking such an intermediate-level course, perhaps even more so than from a higher-level one. Our own department at Howard University is considering a mid-level math methods course, and I would definitely recommend this textbook as well suited. **A Course in Mathematical Methods for Physicists** includes plenty of interesting worked-out examples, many of them quite realistic, and uses them to introduce concepts in a reasonable progression. …
Although the subject of mathematical methods has inspired many valuable texts, Herman’s approach, motivated by the physics applications, is novel, seldom used by other authors. The myriad well-chosen worked-out examples and other strengths have earned my firm endorsement …"
?Tristan Hübsch, Howard University, Washington, District of Columbia, USA, from *Physics Today*

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