

## Wave Phenomena (Dover Books on Physics)

By Dudley H. Towne

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This lucidly written text emphasizes optics and acoustics, with considerable emphasis placed on establishing a close connection between mathematical expressions and the associated physical ideas.

Beginning with an inductive derivation of the equation for transverse waves on a string, the student is led through successively more complex subjects as acoustic plane waves, boundary-value problems, polarization, optical anisotropy, interference, diffraction, dispersion, and three-dimensional waves.

Designed for a one-semester intermediate level undergraduate course (although there is easily enough material here for two semesters), *Wave Phenomena* is accessible to students with calculus up to the level of partial differentiations. Mathematical techniques, beyond the most elementary ones, are evolved, when needed, in the book itself. Moreover, the treatment is so thorough that students could work through the book themselves with minimal help from an instructor. There are a large number of interesting, well-chosen problems at the end of each chapter (with solutions for about half of them), and several appendixes providing additional mathematical apparatus: the representation of sinusoidal functions by complex numbers, frequently used trigonometric identities, one-dimensional hydrodynamic equations in Eulerian form, and more.

Although geared to undergraduate physics majors, the comprehensiveness, rigor, and clarity of this text make it an ideal reference for almost any physicist in need of a review of optics or acoustics.

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