# DESCRIPTION

Oceanography calls for a wide variety of mathematical and statistical techniques, and this accessible treatment provides the basics every oceanographer needs to know, including:

* Practical ways to deal with chemical, geological, and biological oceanographic data
* Instructions on detecting the existence of patterns in what appears to be noise
* Numerous examples from the field that highlight the application of the methods presented

Written by an oceanographer and based on his successful course at the University of Hawaii, the volume is well suited to a two-semester course at the graduate level. The book reviews the necessary calculus, clarifies statistical concepts, and includes end-of-chapter problems that illustrate and expand the various topics. Tips on using MATLAB software in matrix operations complement chapters that deal with the formulation of relationships in terms of matrices.

The main body of the text covers the actual methods of dealing with data—including least squares and linear regression, correlation functions and analysis of variance, means and error bounds, nonlinear techniques and weighted least squares, numerical integration, and other modeling techniques. Unlike most introductory texts, Mathematical Methods for Oceanographers discusses regression methods in great detail, and includes an analysis of why certain methods produce unbiased parameter estimates. Finally, the chapter on time series analysis covers an area of particular interest to physical oceanographers.
The numerous problems and solutions included in the book enable readers to check their understanding of concepts and techniques as well as their ability to apply what they have learned.

A must-read for students of oceanography, this text/reference is also useful for professionals in the field, as well as for fisheries scientists, biologists, and those in the environmental sciences.

A systematic introduction to the mathematics oceanographers need

Topics covered in Mathematical Methods for Oceanographers include:

* A review of the necessary calculus
* Model I linear regression
* Correlation analysis
* Model II linear regression
* Polynomial curve fitting, linear multiple regression analysis, and nonlinear least squares
* Numerical integration
* Box models
* Time series analysis

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**ABOUT THE AUTHOR**

EDWARD LAWS is Professor of Oceanography and Assistant Vice President for Research and Graduate Education at the University of Hawaii at Manoa. He holds a PhD from Harvard University in chemical physics and is the author of Aquatic Pollution, Second Edition, also published by Wiley. In 1994 he was the William McCurdy Fellow at the Duke University Marine Laboratory, and it was during that time that he wrote most of this book.

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