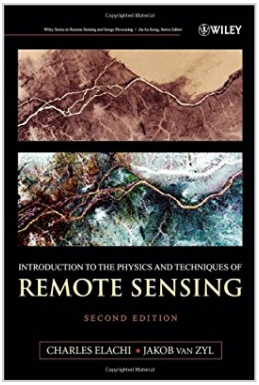

Introduction To The Physics and Techniques of Remote Sensing

By Charles Elachi, Jakob J. van Zyl

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The science and engineering of remote sensing--theory and applications

The Second Edition of this authoritative book offers readers the essential science and engineering foundation needed to understand remote sensing and apply it in real-world situations. Thoroughly updated to reflect the tremendous technological leaps made since the publication of the first edition, this book covers the gamut of knowledge and skills needed to work in this dynamic field, including:
* Physics involved in wave-matter interaction, the building blocks for interpreting data
* Techniques used to collect data
* Remote sensing applications

The authors have carefully structured and organized the book to introduce readers to the basics, and then move on to more advanced applications. Following an introduction, Chapter 2 sets forth the basic properties of electromagnetic waves and their interactions with matter. Chapters 3 through 7 cover the use of remote sensing in solid surface studies, including oceans. Each chapter covers one major part of the electromagnetic spectrum (e.g., visible/near infrared, thermal infrared, passive microwave, and active microwave).

Chapters 8 through 12 then cover remote sensing in the study of atmospheres and ionospheres. Each chapter first presents the basic interaction mechanism, followed by techniques to acquire, measure, and study the information, or waves, emanating from the medium under investigation. In most cases, a specific advanced sensor is used for illustration.

The book is generously illustrated with fifty percent new figures. Numerous illustrations are reproduced in a separate section of color plates. Examples of data acquired from spaceborne sensors are included throughout. Finally, a set of

exercises is provided.

This book is based on an upper-level undergraduate and first-year graduate course taught by the authors at the California Institute of Technology. Because of the multidisciplinary nature of the field and its applications, it is appropriate for students in electrical engineering, applied physics, geology, planetary science, astronomy, and aeronautics. It is also recommended for any engineer or scientist interested in working in this exciting field.

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Editorial Review

Review
"…upper level classes in applied physics, geology, planetary sciences, natural resource management, and environmental studies should consider this textbook for their collection." (*E-STREAMS*, September 2007)

"...highly favorable...a handy reference for students and professionals alike." (*Computers & Geosciences*, August 2007)

"For professionals in the field and for students, where a thorough understanding of the physics and mathematics underlying the acquisition and analysis of remote sensing data is required, this book satisfies the need well." (*Oceanography*, December 2006)

From the Publisher
Covers a wide spectrum of remote sensing techniques as applied to earth and planetary atmospheres and surface sciences. Examines the basic physics of wave/matter interactions and techniques of remote sensing across the electromagnetic spectrum (UV, visible mm and microwave), and provides examples of major applications in the fields of geology, oceanography, planetology, and atmospheric sciences.

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