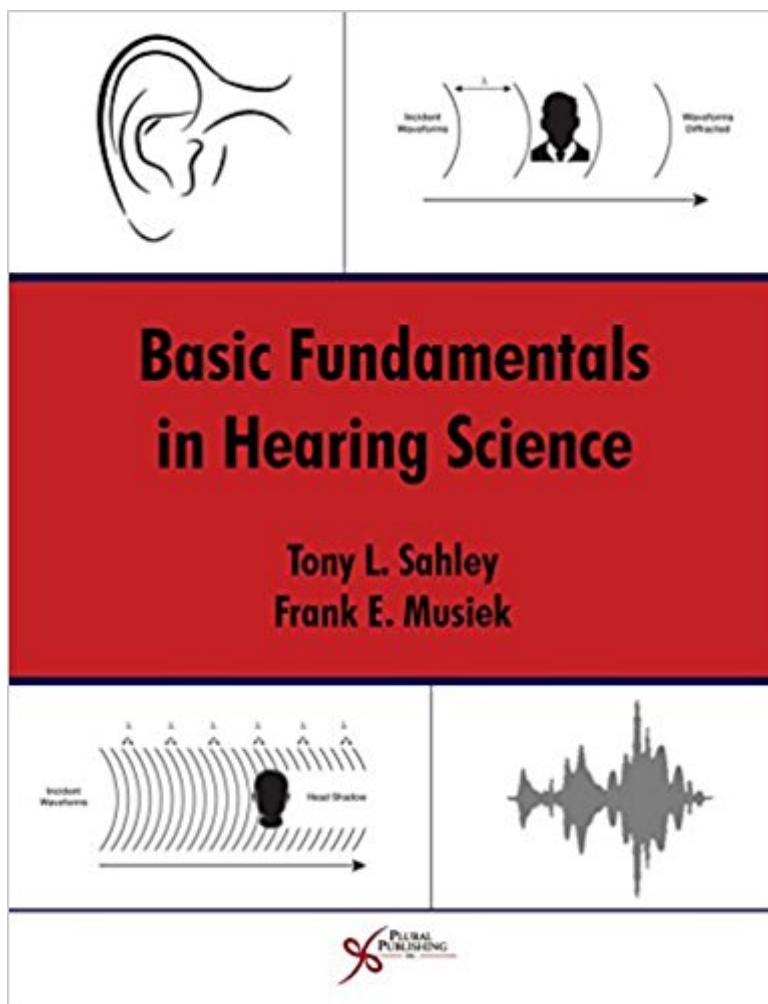


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# Basic Fundamentals In Hearing Science



## Synopsis

Basic Fundamentals in Hearing Science is a practical textbook written primarily for college undergraduates preparing for graduate programs in speech-language pathology or audiology. Using Newtonian physics, the authors present a novel approach to the subject of hearing science enabling students to develop their understanding of the subject while building their knowledge of scientific concepts as they move through the text. Students progress from the basics to more difficult concepts in a graduated process. The text encourages thinking and problem solving rather than learning by rote memorization and clarifies obscure concepts in a writing style that promotes greater understanding and comprehension. Pedagogical elements include key terms listed for each chapter, bulleted chapter summaries, and review questions at the end of each chapter. For undergraduate hearing science students without hard science backgrounds, this text aims to decompress and facilitate the comprehension of difficult and often cumbersome concepts in order to master the basic concepts in hearing science. This textbook is also a useful supplemental or recommended reference for speech and hearing combined courses that require more coverage of hearing science than currently available in speech-oriented textbooks. Key features of Basic Fundamentals in Hearing Science include: An extensive number of figures and illustrations for improved overall comprehension of the subject matter Clear descriptions of the many and various forms of sound wave phenomenon, and of auditory anatomy and physiology--from the outer ear to the auditory cortex An overview of scientific measurement scales and notation including the use of logarithms, exponential and scientific notation, and the metric system An opening chapter that defines and elucidates the meaning, practice, and philosophy of science--with an emphasis on theory-driven research--including a practical guide for the writing of a scientific manuscript Chapters devoted to the basic terminology used in hearing science and the application of those basic principles and terms, as well as a chapter that addresses basic nervous system terminology and describes the structure and function of the twelve pairs of cranial nerves A chapter that deals exclusively with the structure and function of the auditory system From the Foreword: "The text is written with meticulous and thorough attention to detail and accuracy. This is especially apparent with regard to the formulas and tables provided for the computations of the Bel, decibel, and RMS amplitude. An additional feature that adds to the attractiveness and flair of the book is the frequent reference to historic discoveries and to those who made them. Concepts presented in the text are beautifully complemented by illustrations, graphs, and equations. This is a book I wish I had had when I was a student, and I believe it will become a first choice textbook among undergraduate and graduate students. It will provide quick answers to questions, both simple and complex, and will

provide ever-deepening insights into hearing science when knowledge of details is the goal." --

James A. Kaltenbach, PhD, Director of Otology Research, The Cleveland Clinic

## **Book Information**

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## **Customer Reviews**

Drs. Tony Sahley and Frank Musiek, in their book *Basic Fundamentals in Hearing Science*, have put together an impressive ensemble of chapters that form the theoretical and practical foundation for hearing science that is the basis for many fields, including audiology. In a comprehensive manuscript covering 704 pages, the authors cover, not only the traditional hearing science, acoustic, and psychoacoustic concepts, but they also begin with a healthy overview of what science is and the scientific method, and they conclude with a terrific overview of the nervous system and anatomy and physiology of the auditory system. Key attributes of this book include chapters that begin with key terms that will be covered and end with a thorough, bulleted summary with follow-up questions for the learner. This book is well written and organized, and it contains some of the best figures I have seen recently to explain otherwise difficult topics. As would be expected in a hearing science book, there is math and there are math problems for students to solve, but the text and figures bring the math to life. The conceptual design of the figures appears to be well considered and beautifully illustrated, and together with the text, they should help to promote comprehension. Having seen many hearing science books over the years, Sahley and Musiek's book appears to offer a much needed fresh perspective to hearing science, and their approach and organization of

the book should be useful to both undergraduate and graduate students for years to come.

--Samuel R. Atcherson, PhD  
Associate Professor, Department of Audiology and Speech  
Pathology  
University of Arkansas at Little Rock and University of Arkansas for Medical  
Sciences  
Adjunct Clinical Associate Professor, Department of Otolaryngology

Tony L. Sahley, PhD, CCC-A, is currently an associate professor in the School of Health Sciences at Cleveland State University, where he teaches upper-level undergraduate courses in hearing and speech science, neuroscience, medical physiology, and clinical audiology. Dr. Sahley also holds an adjunct appointment in the Department of Biological, Geological, and Environmental Sciences (BGES). His dissertation was conducted at Dartmouth Medical School, Hanover, New Hampshire, under the mentorship of Dr. Frank E. Musiek, and he received a doctorate in hearing science from the joint programs at the University of California, Santa Barbara and at the University of California, San Francisco Medical Center. Dr. Sahley also completed his clinical internship at the Cleveland Clinic Foundation and authored the book, *Efferent Auditory System: Structure and Function* together with coauthors Dr. R.H. Nodar and Dr. F.E. Musiek. Dr. Sahley began publishing articles on peptide neuropharmacology in 1976 and is presently investigating the role of opioid peptides, glutamate, and glutamate-sensitive NMDA receptors in both the generation and the exacerbation of tinnitus.

Frank E. Musiek, PhD, CCC-A, is professor and director of auditory research, Department of Speech, Language, and Hearing Sciences, and professor of otolaryngology, School of Medicine, University of Connecticut. He is the 2007 recipient of the American Academy of Audiology (AAA) James Jerger Career Award for Research in Audiology, the 2010 recipient of "The Honors" of the American Speech-Language-Hearing Association for his contributions to audiology and auditory neuroscience, as well as the recipient of the "Book of the Year Award" for the 2007 *Handbook of (Central) Auditory Processing Disorder*, Volumes I and II (with Gail D. Chermak, coeditor). He has published more than 200 articles and book chapters in the areas of auditory evoked potentials, central auditory disorders, neuroaudiology, and auditory neuroanatomy, and has authored or edited 9 books. He has served on numerous national and international committees, editorial boards, and task forces, including chairing the 2010 AAA task force for clinical practice guidelines for central auditory processing disorder.

*Fundamentals in Hearing Science* gives you what you need to understand the concepts. Although for the computations, I believe there could be more practice examples in the book. This would be extremely helpful in retaining the information. The concepts are there written in detail, but the book

needs more problems to work and solve. The book also provides a fair to good overview of the mathematics involved in the process and this too is helpful.

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