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Soggetti	Hearing - Physiology Ear - Physiology Auditory perception - Physiology Psychoacoustics
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Formato	Materiale a stampa
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Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Intro -- Preface -- Acknowledgments -- Contributors -- Reviewers -- Section I: Acoustics -- 1. Basic Acoustics -- Key Terms -- Learning Objectives -- Sound -- Sinusoidal Motion -- Spatial Concepts -- Amplitude -- Wavelength (?) -- Temporal Concepts -- Cycle -- Period -- Frequency -- Phase -- Velocity -- Frequency/Period Relationship -- Frequency/Wavelength Relationship -- Sound Propagation and Interference -- Complex Sounds -- Periodicity Versus Aperiodicity -- Resonance -- Cavity (Acoustical) Resonance -- Frequency Response Curve -- Ear Canal Analogy -- The Decibel -- Computational Perspective -- Hearing Threshold Level and Audiometric Zero (0 dB HL) -- Summary -- Recommended Readings -- References -- 2 Review of Speech Acoustics -- Key Terms -- Learning Objectives -- Source-Filter Theory and Vocal Tract Anatomy -- Acoustic Measures -- Fundamental Frequency -- Voice Onset Time -- Root Mean Square Amplitude -- Formants (Spectral Resonances) -- Long-Term Average Spectrum (LTAS) -- Speech Sound Classification -- Consonant Classification -- Vowel Classification -- Speech Intelligibility Index (SII) and Count-the- Dots Audiogram -- SII -- Count-the-Dots Audiogram -- Ling 6 Sounds Test -- Summary -- Recommended Readings -- References -- 3. Digital Signal Processing -- Key Terms -- Learning Objectives --

Amplitude Quantization and Sampling Frequency -- Aliasing and Anti-Aliasing Filtering -- Windowing -- Frequency Versus Time Tradeoff (Frequency Resolution Versus Temporal Resolution) -- Pre-Emphasis -- Digital Hearing Aid Signal Processing -- Compression -- Directional Microphones and Digital Noise Reduction -- Summary -- Recommended Readings -- References -- Section II: Structure and Function -- 4. Anatomy and Physiology of the Conductive Auditory Mechanism -- Key Terms -- Learning Objectives -- Outer Ear -- Auricle (Pinna). External Auditory Meatus (Outer Ear Canal) -- Tympanic Membrane (Eardrum) -- Middle Ear -- Tympanic Cavity Proper (Tympanum) -- Malleus -- Incus -- Stapes -- Middle Ear Muscles -- Function of the Conductive Mechanism -- Non-Acoustic Function -- Acoustic Function -- Impedance -- Impedance Mismatch -- Auditory (Eustachian) Tube -- Action of the Middle Ear Muscles -- Summary -- Recommended Readings -- References -- 5. Anatomy and Physiology of the Sensory Auditory Mechanism -- Key Terms -- Learning Objectives -- Inner Ear -- Function of the Sensory Mechanism -- Mechanical Properties -- Active Processes -- Cochlear Electrophysiology -- Resting Potential -- Potentials Seen as Response to Stimulation -- Single-Cell Electrical Activity -- Phase Locking -- Summary -- Recommended Readings -- References -- 6. Anatomy and Physiology of the Central Auditory Mechanism -- Key Terms -- Learning Objectives -- Afferent Central Auditory Pathway -- Interhemispheric Connections -- Efferent Central Auditory Pathway -- Summary -- Recommended Readings -- References -- Section III: Psychoacoustics -- 7. Normal Hearing -- Key Terms -- Learning Objectives -- Stimulus Characteristics -- Stimulus Frequency -- Stimulus Duration -- Stimulus Intensity -- Methods of Stimulus Presentation -- Earphones -- Speakers -- Assessment of Auditory Sensitivity -- Method of Limits -- Method of Adjustment -- Method of Constant Stimuli -- Listener (Subject) Variables -- Age Variation -- What Is "Normal Hearing"? -- Localization of Sound -- Interaural Intensity (Level) Cues for Localization -- Interaural Time (Phase) Cues for Localization -- Hearing by Bone Conduction -- Summary -- Recommended Readings -- References -- 8. Binaural Processing -- Key Terms -- Learning Objectives -- Advantages of Binaural Hearing -- Listening in Noise -- Binaural Squelch -- Directional Hearing -- Localization. Lateralization -- Vertical Localization -- Minimal Audible Angle (MAA) -- Minimal Audible Movement Angle (MAMA) -- Distance Perception -- Precedence Effect -- Disadvantages of Binaural Hearing -- Physiology of Binaural Hearing -- Afferent Pathways -- Efferent Pathways -- Summary -- Recommended Readings -- References -- 9. Masking -- Key Terms -- Learning Objectives -- Masker-Signal Relationship and Sound Level -- Masking of Tones by Other Tones -- Masking of Tones by Narrow Noise Bands -- The Critical Band -- Masking of Tones by Wide Noise Bands -- Special Cases of Masking -- Energetic and Informational Masking -- Masking in Clinical Audiology -- Summary -- Recommended Readings -- References -- 10. Temporal Processing -- Key Terms -- Learning Objectives -- Neural Physiology -- Temporal Fine Structure and Temporal Envelope -- Dip Listening -- Modulation Rate and Modulation Depth -- Temporal Processing Skills -- Temporal Integration -- Temporal Resolution -- Temporal Patterning -- Temporal Masking -- Summary -- Recommended Readings -- References -- 11. Loudness and Pitch -- Key Terms -- Learning Objectives -- Loudness -- Pitch -- Residue Pitch and the Missing Fundamental -- Summary -- Recommended Readings -- References -- 12. Differential Sensitivity -- Key Terms -- Learning Objectives -- The

Fechner-Weber Fraction -- Difference Limen for Intensity -- Difference Limen for Frequency -- Temporal Discrimination -- Summary -- Recommended Readings -- References -- 13. Signal Detection Theory -- Key Terms -- Learning Objectives -- Response Distributions -- Response Types -- Sensitivity and Specificity -- Response Bias -- Discriminability Index (d') and ROC Curves -- Ceiling and Floor Effects -- Summary -- Recommended Readings -- References -- 14. Auditory Perception and Hearing Impairment -- Key Terms -- Learning Objectives -- Outer Hair Cell (OHC) Damage. Auditory Recruitment -- Inner Hair Cell (IHC) Damage -- Cochlear Dead Regions -- Auditory Nerve Damage -- Effects on Frequency Selectivity -- Auditory Excitation Patterns -- Effects on Temporal Processing -- Summary -- Recommended Readings -- References -- Section IV: Pathologies of the Auditory Mechanisms -- 15. Pathologies of the Conductive Auditory Mechanism -- Key Terms -- Learning Objectives -- Pathologies of the Outer Ear -- Auricle -- Chondritis and Cauliflower Ear -- External Auditory Canal -- Impacted Cerumen -- Pathologies of the Middle Ear -- Eustachian Tube (Auditory Tube) -- Otitis Media -- Mastoiditis -- Cholesteatoma -- Pathologies of the Middle Ear Ossicles -- Otosclerosis -- Ossicular Discontinuity -- Summary -- Recommended Readings -- References -- 16. Pathologies of the Sensory Auditory Mechanism -- Key Terms -- Learning Objectives -- Inner Ear Pathologies -- Cochlea -- Auditory and Non-Auditory Effects of Noise -- Noise-Induced Hearing Loss -- Socioacusis and Presbycusis -- Meniere's Disease -- Sudden Sensorineural Hearing Loss -- Ototoxicity -- Auditory Nerve -- Acoustic Neuroma (Vestibular Schwannoma) -- Auditory Neuropathy Spectrum Disorder -- Summary -- Recommended Readings -- References -- 17. Pathologies of the Central Auditory Mechanism -- Key Terms -- Learning Objectives -- (Central) Auditory Processing Definition -- Signs and Symptoms -- (C) APD Evaluation -- Behavioral (Central) Auditory Skill Areas -- Auditory Figure Ground -- Low-Redundancy Speech -- Dichotic Listening -- Temporal Processing -- Electrophysiological Assessment -- Neural Response Overview -- Management Strategies -- Environmental Modifications -- Compensatory Strategies -- Auditory Training -- Assistive Listening Technology -- Pathologies of the Central Auditory Pathway -- Traumatic Brain Injury -- Cortical/Central Deafness -- Cerebrovascular Accident. Multiple Sclerosis -- Summary -- Recommended Readings -- References -- Glossary -- Index.

Sommario/riassunto

This textbook introduces the basic concepts in hearing science in an easy-to-understand format. With a wide variety of student-friendly features and instructor resources, this comprehensive textbook facilitates the absorption of technical material by both undergraduate and graduate students.