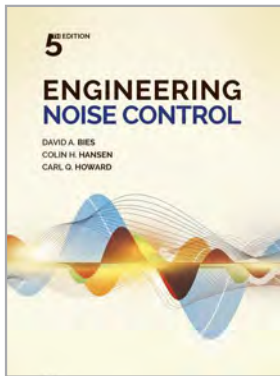


## Book Reviews

These reviews of books and other forms of information express the opinions of the individual reviewers and are not necessarily endorsed by the Editorial Board of this Journal. – Philip I. Marston, Book Review Editor

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### Engineering Noise Control Fifth Edition



**Authors:** David A. Bies, Colin H. Hansen, and Carl O. Howard

**Publisher:** CRC Press, Boca Raton, Florida, 2018, 826 pp.

**Price:** \$149.95 (hardcover)

**ISBN:** 978-1-138-30690-5

The 5th edition of this book is a thoroughly updated and reorganized textbook in comparison with the previous editions (4th ed., 2009; 3rd ed., 2003; 2nd

ed., 1996; 1st ed., 1988). It contains a fair amount of new material, with many conceptual illustrations and extensive references. The book represents a comprehensive handling of the state of the art of important topics in acoustics and noise control engineering, and brings together a lot of relevant practical information, presented by authors with much knowledge and practical experience. The book represents a compilation of conventional and advanced material, including many useful calculation details, hints, and instructions, valuable to both academics and acoustical consultants as well as noise control engineers.

After a thoughtful rearrangement (from previous editions), the book covers, in addition to basic preparations including human hearing and noise criteria (Chapters 1 and 2), instrumentation for noise measurement and analysis as well as transducers, different types of sound sources, radiators, and sound power (Chapters 3 and 4); sound propagation outdoors (Chapter 5), including over porous ground, barriers, and diffraction at edge; room-acoustics (Chapter 6); building acoustics (Chapter 7); muffling devices (Chapter 8); structure-borne vibrations and controls (Chapter 9); and sound power and sound pressure level estimation procedures (Chapter 10) of a wide variety of devices, machines, and transportation noise. In the end, Chapters 11 and 12 deal with practical numerical prediction tools and frequency analysis, respectively. Fundamental knowledge and tools necessary for readers are also included in six different sections of the Appendix.

To shed light on some of the details, Chapter 5 contains comprehensive material on outdoor sound propagation, from principles underlying outdoor sound propagation calculations, the law of reflection/refraction for both plane and spherical waves, sound propagation impacted by ground, turbulence effects, and atmospheric and meteorological effects to barrier effects and many other miscellaneous effects. Instruction on a number of propagation models also makes this chapter more practice-relevant. Chapter 12 is a new chapter dealing with frequency analysis containing basic material on signal processing and spectral analysis pertinent to noise and vibration problems, which was partially covered in Appendix D of the previous editions. This reviewer appreciates the authors' recognition that fundamental signal processing concepts and tools are currently integral parts of methods of sound vibration and noise control engineering. They raised the importance of these materials by arranging them into a separate chapter of the book.

The emphasis of this edition, like the 4th one, is solely on passive methods of noise control. The authors suggest that readers who are interested in active noise control consult with *Understanding Active Noise Cancellation* by Colin H. Hansen.

Since the reviewer's research interests and educational tasks overlap somewhat with those of the authors, this book was found to be quite interesting and full of much useful information. This is a necessary book for sound engineers and acousticians engaged in their professional work on noise control engineering. This reviewer would find it difficult to use it as a text for any class within one semester, though. The sufficiently detailed treatment of acoustics/sound propagation goes beyond one course in classroom teaching for either graduate or undergraduate study. One would need to carefully select key components from the book chapters for a noise control engineering course. The book does serve well as a ready reference for those who have some training in noise control or acoustics.

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