



Heat Conduction

By David W. Hahn, M. Necati Özisik

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The long-awaited revision of the bestseller on heat conduction

Heat Conduction, Third Edition is an update of the classic text on heat conduction, replacing some of the coverage of numerical methods with content on micro- and nanoscale heat transfer. With an emphasis on the mathematics and underlying physics, this new edition has considerable depth and analytical rigor, providing a systematic framework for each solution scheme with attention to boundary conditions and energy conservation. Chapter coverage includes:

- Heat conduction fundamentals
- Orthogonal functions, boundary value problems, and the Fourier Series
- The separation of variables in the rectangular coordinate system
- The separation of variables in the cylindrical coordinate system
- The separation of variables in the spherical coordinate system
- Solution of the heat equation for semi-infinite and infinite domains
- The use of Duhamel's theorem
- The use of Green's function for solution of heat conduction
- The use of the Laplace transform
- One-dimensional composite medium
- Moving heat source problems
- Phase-change problems
- Approximate analytic methods
- Integral-transform technique
- Heat conduction in anisotropic solids
- Introduction to microscale heat conduction

In addition, new capstone examples are included in this edition and extensive problems, cases, and examples have been thoroughly updated. A solutions manual is also available.

Heat Conduction is appropriate reading for students in mainstream courses of conduction heat transfer, students in mechanical engineering, and engineers in research and design functions throughout industry.

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Editorial Review

About the Author

David W. Hahn is the Knox T. Millsaps Professor of Mechanical and Aerospace Engineering at the University of Florida, Gainesville. His areas of specialization include both thermal sciences and biomedical engineering, including the development and application of laser-based diagnostic techniques and general laser-material interactions.

The late **M. Necati Özisik** retired as Professor Emeritus of North Carolina State University's Mechanical and Aerospace Engineering Department, where he spent most of his academic career. Professor Özisik dedicated his life to education and research in heat transfer. His outstanding contributions earned him several awards, including the Outstanding Engineering Educator Award from the American Society for Engineering Education in 1992.

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