



Partial Differential Equations: Analytical and Numerical Methods

By Mark S. Gockenbach

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This introductory text on partial differential equations is the first to integrate modern and classical techniques for solving PDEs at a level suitable for undergraduates. The author successfully complements the classical topic of Fourier series with modern finite element methods. The result is an up-to-date, powerful, and flexible approach to solving PDEs, which both faculty and students will find refreshing, challenging, and rewarding. Linear algebra is a key component of the text, providing a framework both for computing solutions and for understanding the theoretical basis of the methods. Although techniques are emphasized over theory, the methods are presented in a mathematically sound fashion to develop a strong foundation for further study. Numerous exercises and examples involve meaningful experiments with realistic physical parameters, allowing students to use physical intuition to understand the qualitative features of the solutions.

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'I love this book and look forward to using it as a text in the future. ... It's the first truly modern approach that I've seen in a PDE text.' Maeve L. McCarthy, MAA Online Book Review

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About the Author

Mark S. Gockenbach is an Associate Professor of Mathematical Sciences at Michigan Technological University. He earned his PhD from Rice University in 1994, and has held faculty positions at Indiana University, University of Michigan, and Rice University. His research interests include inverse problems, computational optimisation, and mathematical software.

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