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By Arvind Varma, Massimo Morbidelli



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Mathematical Methods in Chemical Engineering builds on students' knowledge of calculus, linear algebra, and differential equations, employing appropriate examples and applications from chemical engineering to illustrate the techniques. It provides an integrated treatment of linear operator theory from determinants through partial differential equations, featuring an extensive chapter on nonlinear ordinary differential equations as well as strong coverage of first-order partial differential equations and perturbation methods. Numerous high-quality diagrams and graphics support the concepts and solutions. Many examples are included throughout the text, and a large number of well-conceived problems at the end of each chapter reinforce the concepts presented. Also, in some cases the results of the mathematical analysis are compared with experimental data--a unique feature for a mathematical book.

The text offers instructors the flexibility to cover all of the material presented or to select a few methods to teach, so that they may cultivate the specific mathematical skills which are most appropriate for their students. The topical coverage provides a good balance between material which can be taught in a one-year course and the techniques that chemical engineers need to know to effectively model, analyze, and carry out numerical simulations of chemical engineering processes, with an emphasis on developing techniques which can be used in applications. *Mathematical Methods in Chemical Engineering* serves as both an ideal text for chemical engineering students in advanced mathematical methods courses and a comprehensive reference in mathematical methods for chemical engineering practitioners in academic institutions and industry.



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About the Author

Arvind Varma is at University of Notre Dame. Massimo Morbidelli is at ETH Zurich.

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