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Focusing on growth and decay processes, interacting populations, and heating/cooling problems, Mathematical Modelling with Case Studies: A Differential Equations Approach using MapleÖ and MATLAB®, Second Edition presents mathematical techniques applicable to models involving differential equations that describe rates of change. Although the authors concentrate on models involving differential equations, the ideas used can be applied to many other areas.

The book carefully details the process of constructing a model, including the conversion of a seemingly complex problem into a much simpler one. It uses flow diagrams and word equations to aid in the model building process and to develop the mathematical equations. Employing theoretical, graphical, and computational tools, the authors analyze the behavior of the models under changing conditions. They discuss the validation of the models and suggest extensions to the models with an emphasis on recognizing the strengths and limitations of each model.

Through applications and the tools of MapleÖ and MATLAB®, this textbook provides hands-on model building skills. It develops, extends, and improves simple models as well as interprets the results.