



Study of Mathematical Modeling, principles and Methods

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Introduction : Mathematical modeling is a principled activity that has both principles behind it and methods that can be successfully applied. The principles are overarching or meta-principles phrased as questions about the intentions and purposes of mathematical modeling. These meta-principles are almost philosophical in nature. modeling is an activity, a cognitive activity in which we think about and make models to describe how devices or objects of interest behave.



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There are many ways in which devices and behaviors can be described. We can use words, drawings or sketches, physical models, computer programs, or mathematical formulas. In other words, the modeling activity can be done in several languages, often simultaneously. Since we are particularly interested in using the language of mathematics to make models,

Mathematical Model Mathematical model is an representation in mathematical terms of the behavior of real devices and objects, Since the modeling of devices and phenomena is essential to both engineering and science, engineers and scientists have very practical reasons for doing mathematical modeling. In addition, engineers, scientists, and mathematicians want to experience the sheer joy of formulating and solving mathematical problems.

Mathematical Modeling and the Scientific Method : In an elementary picture of the scientific method (see Figure 1.1), we identify a “real world” and a “conceptual world.” The external world is the one we call real; here we observe various phenomena and behaviors, whether natural in origin or produced by artifacts. The conceptual world is the world of the mind—where we live when we try to understand what is going on in that real, external world.

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