Lecture Notes On Mathematical Modelling In Applied Sciences

Lecture 1: Basics of Mathematical Modeling Mathematical Modeling: Lecture 1 -- Difference Equations -- Part 1 MATHEMATICAL MODELING

SETTING UP A DIFFERENTIAL EQUATION Introduction to Mathematical Modeling

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1.1 What is mathematical modelling? Models describe our beliefs about how the world functions. In mathematical modelling, we translate those beliefs into the language of mathematics. This

has many advantages 1. Mathematics is a very precise language. This helps us to formulate ideas and identify underlying assumptions. 2.

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Modelling

Let y(n+1)=2.2y(n)(1−(y(n))2)+0 .3(y(n))2. give the state ofthe heart at timen, measured by some sort ofpotential obtained from Electrocardiograms, (ECGs). Ifwe start the heart *aty(0) = −0.4, it converges rapidly to a stable oscilla- tion. This is shown in figure 4.12.*

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Assume that the number of offspring produced per individual per unit time is a constant b>0. Similarly

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