CT248: Introduction to Modeling

Lab Exam 2 (March 30th 2023 – IT106)

Please Note: This Exam must be completed in the Lab. You must sign in in order to have a valid submission.

You must submit your code on Blackboard before you leave the lab, otherwise it will be an invalid submission.

Given the following model of logistic growth:

$$\frac{dP}{dt} = rP\left(1 - \frac{P}{K}\right)$$

Where
- P is the population
- R is the annual growth rate
- K is the maximum capacity

Your task is to:

1. Implement this model as an anonymous function, with two additional arguments, one for the growth rate (r) and the other for the maximum capacity (K).

2. Run the model 50 times using ode45() and store the result in a matrix. For each run, a different value of K should be used. The minimum value of K is 1000, and the maximum is 1000000. When testing, use just 5 runs.

3. Visualise the results in the following plot.