

BIQ940-2018

Lecture Material

A script from SS2009 "[Einführung in die Theoretische Systembiologie](#)" (in German).

We will cover several topics from this lecture in the Quantitative Biologie Bachelor

A one-page summary of the [modified Verhulst equation](#) (logistic growth with low density correction)

A chapter on [stability analysis](#) of stationary states (in German)

Practical

Python jupyter notebooks with exercises for each day are available from [Matuszyska repository at githu](#).

Final project

Using qualitative theory of ODEs as well as numerical simulations, investigate the dynamics of a single neuron using simplified Hodgkin-Huxley biophysical model (the Morris-Lecar (ML) model). In particular, different patterns of activation depending on its intrinsic parameters as well as on the stimulus intensities should be assessed.

Please send your filled in [Jupyter notebook](#) to anna.matuszynska@hhu.de & oliver.ebenhoeh@hhu.de with the title of message "BIQ940-2018 Project" till the **24th of June 2018**. Any work send after this day will not be marked.

The project accounts for 30% of the final mark.

Consultations in the 3rd Week

Tue, Wed, Thu 14:00 - 15:00, Dr. Matuszyska, Building 25.32, Floor 03 Room 26

Exercises

[Exam paper](#) from 2014 (for exercise purposes only)