



LUDWIG-
MAXIMILIANS-
UNIVERSITÄT
MÜNCHEN

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BIOZENTRUM DER LMU
DEPARTMENT BIOLOGIE II
EVOLUTIONSBIOLOGIE



Lecture with Exercises (3 Credit Points):

Mathematical modeling in biology

Contents:

Students will learn how to translate systems from ecology or from population genetics into (implementable) mathematical models. Models for large populations can hardly be implemented efficiently. Therefore our main focus will be on diffusion approximations (both random and deterministic). New results on the implementation of these diffusion models will complement the modeling part.

Structure:

1. Introduction and motivating example
2. One-dimensional stochastic, demographic models
3. Diffusion approximation
4. Multi-dimensional deterministic models
5. Multi-dimensional diffusions
6. Basic test theory
7. Backward processes

Time and room:

From October 19, 2011 until February 7, 2012

Lecture: Every Wednesday from 2pm to 4pm

Exercise: Every Wednesday from 4pm to 5pm.

Room: 106, Richard-Wagner Str 10, near Königsplatz

Requirements: Basic knowledge of a lecture on probability theory or on stochastic processes.

Language: English (German if preferred by all attendees)

Questions: Please send any question to hutzenthaler@biologie.uni-muenchen.de

All Students of Bioinformatics and of Biostatistics are warmly welcome.
A short email is welcome to estimate the number of attendees.

