

# Mathematical modeling, spring 2012

## Mathematical modeling, spring 2012

### Lecurer

[Stefan Geritz](#)

### Scope

10 cu.

### Type

Advanced studies

### Prerequisites

Basic courses in analysis, linear algebra, probability theory and differential equations.

### Lectures

Weeks 4-9 and 11-18, Tuesday 14-16 in room B321, Thursday 10-12 in room C122. Two hours of exercise classes per week.

Easter holiday 5.-11.4.

### Exams

There are two ways how to get a grade for this course: either you do a regular exam, or you do a project.

An exam lasts three hours and in principle covers all the material presented during the lectures. To give you an idea of what the exam may look like: [Example I](#) / [Example II](#).

A project is like an elaborate homework exercise. There is no hard deadline for handing in the project report; if you can do it in a week: fine; if it takes several months: also fine. Here are some examples of projects that have been used previously and which could be used again if you like: [Example projects](#). You may also choose your own topic, but talk to me first to see whether your plan is suitable for this course. During the project you can also ask me or Thomas for help if you get stuck.

Let me know if you want to do the exam or the project.

### Bibliography

#### - First half of course on ODE models:

[24-01-2012](#) / [26-01-2012](#) / [31-01-2012](#) / [02-02-2012](#) / [09-02-2012](#) / [14-02-2012](#) / [16-02-2012](#) / [21-02-2012](#) / [23-02-2012](#) / [28-02-2012](#)

#### - Second half of course on DDE and PDE models:

[13-03-2012](#) / [15-03-2012](#) / [20-03-2012](#) / [22-03-2012](#) / [27-03-2012](#) / [29-03-2012](#) / [03-04-2012](#) / [12-04-2012](#) / [19-04-2012](#) / [24-04-2012](#) / [26-04-2012](#)

#### - Appendices:

[Appendix A](#) / [Appendix B](#) / [Appendix C](#) / [Bimolecular reaction between identical particles](#) / [The prey-predator model of Gause](#);

### Exercises

#### - First half of course on ODE models:

[Exercises 1-3](#) / [Exercises 4-6](#) / [Exercises 7-9](#) / [Exercises 10-12](#)

#### - Second half of course on DDE and PDE models:

[Exercises 13-16](#) / [Exercises 17-18](#) / [Exercises 19-20](#) / [Exercises 21-23](#)

### Exercise groups

Group	Day	Time	Place	Instructor
1.	Friday	10-12	C122	<a href="#">Thomas Vallier</a>