

### Lecture information

„Numerics for Ordinary Differential Equations“

Autumn term 2021

#### Lecturer

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#### Administration

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#### Lecture

Monday	12:00 – 13:30 Uhr	A5, Room C 012
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The first lecture will be on **06.09.2021**. This course is planned to take place in presence. Note that you will need to be vaccinated against, have recovered from or be tested negative for Covid-19 to participate in presence. If there are any conflicts, please contact the lecturers.

The content of the lecture (script, exercises, etc.) is provided on ILIAS. Please check ILIAS regularly for further information. You will receive the password for ILIAS in the first lecture.

#### Zoom Q&A

In addition, there will be a weekly Q&A session via Zoom, in case you have any questions concerning the lecture. The exact day and time will be determined in the second lecture.

#### Exercise class

Friday	10:15 – 11:45 Uhr	A5, Room C 012
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The first exercise class takes place on **10.09.2021**.

Please download the exercise sheets in ILIAS and check ILIAS regularly for further information.

#### Further information

- **First exercise sheet** will be available online on **06.09.2021**.
- There will be **5 dutiable programming exercises**. Please work in pairs and hand in your solutions to the programming exercise within one week after the sheet is available online. Solutions must be send to

tschilli@mail.uni-mannheim.de!!

## Contents

This course covers basic numerical concepts for solving ordinary differential equations and gives insight to possible applications. Many problems stemming from science and engineering can be modelling using systems of ODEs. In general, those problems are difficult to solve analytically, therefore basic methods for numerical solutions are studied.

## Admittance to the exam

Every participant needs to hand in a reasonable solution for each programming exercise. At least 75% of the exercises need to be successful in order to be admitted for the final oral exam.

## Literature

Please consider the following books for supplementary reference:

- *Moler, C. B.*, Numerical computing with MATLAB, SIAM, 2004.
- *Deuffhard, P., Bornemann, F.*, Scientific Computing with Ordinary Differential Equations, Springer, 2002.
- *Deuffhard, P., Bornemann, F.*, Numerische Mathematik II, de Gruyter, 2008.
- *Quarteroni, A., Saleri, F.*, Scientific Computing with MATLAB, Springer, 2005.
- *Quarteroni, A., Sacco, R., Saleri, F.*, Numerical Mathematics, Springer, 2000.