Fakultät für Wirtschaftsinformatik
und Wirtschaftsmathematik

UNIVERSITÄT MANNHEIM

Lecture information

„Numerics for Ordinary Differential Equations“

Autumn term 2022

Lecturer

Prof. Dr. Simone Göttlich	goettlich@uni-mannheim.de	B6, Room C 311
Thomas Schillinger	schillinger@uni-mannheim.de	B6, Room C 310

Administration

Sabine Braak	braak@uni-mannheim.de	B6, Room C 312

Lecture

Monday	10:15 – 11:45 Uhr	B6, Room A 101

The first lecture will be on **05.09.2022**. This course takes place 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.

Exercise class

Friday	10:15 – 11:45 Uhr	A5, Room C 014

The first exercise class takes place on **09.09.2022**.
Please download the exercise sheets in ILIAS and check ILIAS regularly for further information.

Further information

- **First exercise sheet** will be available online on **05.09.2022.**
- There will be **5 mandatory 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 uploaded in ILIAS.
- There is a ten minutes discussion about the submitted programming exercises in Thomas' office in the week after the submisson (date tba).

Contents

This course covers basic numerical concepts for solving ordinary differential equations (ODEs) 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 for the admission to the final oral exam.

Literature

Please consider the following books for supplementary reference:

- *Moler, C. B.*, Numerical computing with MATLAB, SIAM, 2004.
- *Deuflhard, P., Bornemann, F.*, Scientific Computing with Ordinary Differential Equations, Springer, 2002.
- *Deuflhard, 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.