

Algorithmization and programming

ALGORITHMIZATION AND PROGRAMMING

winter semester 2021/2022

Lectures: Tuesday 9:00 (room KN:A-447 or KN:A-309), weeks 1 - 7 (from 21.9. to 2.11.2021)

Tutorials: Friday 14:15 (room KN:A-447), weeks 1 - 13

Preliminary Course Schedule - Lectures (for Tutorials, see [here](#))

Week 1 - Introduction

- basic information about the course
- [algorithms](#):
 - examples
 - what they are
 - how to write them down
 - programming languages
- introduction to Matlab:
 - [desktop](#), command window
 - a short list of [operators and functions](#)
 - [vectors](#) and [matrices](#) in Matlab
 - [scripts \(m-files\)](#)

Week 2 - Lecture cancelled (public holiday 28-th of September)

Week 3 - Flow control in Matlab

- [recapitulation](#)
- conditional statements - command `if` ([conditional control](#))
- [loop control](#):
 - predefined number of repetitions - command `for`
 - number of repetitions not known in advance - command `while`
- branching to more branches - command [switch](#)
- [flow control - examples](#)
- [short list of commands](#)

Week 4 - Numerical algorithms

- [recapitulation](#)
- numerical algorithms:
 - Euler's method: [the algorithm](#)
 - Interpolation, approximation

- [Input/Output examples](#) (optional)
- [examples](#) from the 4-th lecture

Week 5 - Numerical algorithms

- numerical algorithms:
 - numerical integration: [Riemann sums](#), [Trapezoid](#) and [Simpson's rule](#)
 - logistic map: see [here](#) or [here](#)
 - fixed point iterations: [the algorithm](#)
- [examples](#) from the 5-th lecture

Week 6 - Functions in Matlab

- [functions](#): how to create your own function
- [examples](#) from the 6-th lecture

Week 7

- functions - [advanced examples](#)
- application - statistics: [examples](#)
- plots: [examples](#)
- [computer data representation](#)
- [Matlab data types](#)

References

- [Matlab Tutorial for Engineering](#)
- [Matlab Tutorial - Clarkson University](#)
- [Matlab Tutorial - University of Utah](#)
- [Matlab Tutorial - Boston University](#)
- [Matlab Tutorial - Mathworks](#)
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SW

[Matlab](#) - student version can be installed from download.cvut.cz
(it can be used from the CTU network only)

[GNU OCTAVE](#) - free, similar to Matlab

[zpět](#)

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