

Course Information

B0B17MTB, BE0B17MTB – MATLAB

Miloslav Čapek, Viktor Adler, Vít Losenický, *et al.*

Department of Electromagnetic Field
Czech Technical University in Prague
Czech Republic
matlab@fel.cvut.cz

September 19, 2022
Winter semester 2022/23



- ▶ 14 weeks (14th week is a “reserve”)
 - ▶ 11 blocks with new theory, 1 block of bonuses, 1 block of projects.
- ▶ **Conditions of credit award:**
 - ▶ To hand in a project (last week, **50 points**, min. 25 points).
 - ▶ Competition assignment (see next slide).
 - ▶ To write a test (last week of the semester, **20 points**).
 - ▶ To gather points from semester (**45 points**, min. 15 points):
 - ▶ short test during semester (15 points),
 - ▶ homeworks (3 × 10 points).
 - ▶ Max. 2 missed classes (more absences only after prior arrangement).
 - ▶ There are two courses taught this semester, any lecture can be substituted.
- ▶ Could happen that not all of the stuff of the course will be presented, because of time constraint – understanding the basics is a priority.
 - ▶ Bonus stuff (slides) available for advanced students.
- ▶ <https://cw.fel.cvut.cz/b212/courses/mtb>

Grade	Points
A	90 – 115
B	80 – 89
C	70 – 79
D	60 – 69
E	50 – 59
F	0 – 49



Miloslav Čapek
Course guarantor



Viktor Adler
Course teacher



Vít Losenický
Course teacher



Jakub Liška
Course assistant



Jonáš Tuček
Course assistant



Vojtěch Neuman
Course assistant

To contact us, always use matlab@fel.cvut.cz!



- ▶ Each slide is categorized into one of following categories (see strip at the edge of slide):

Introduction

Operators

Matrix operations

Visualization

Data Types

Code Execution

Program Flows

GUI

Scripts and Functions

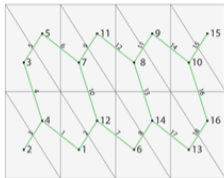
Symbolic Math

Introduction

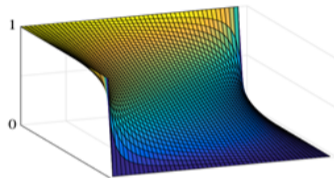
Competition Assignment



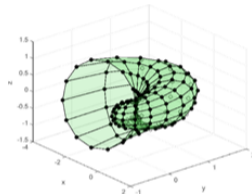
- ▶ Selected assignments from previous semesters:



Graph analysis



Jacobi method



Effective plotting

- ▶ see <https://cw.fel.cvut.cz/b212/courses/mtb/projects/competition>.
- ▶ Project can be selected by any number of students.
- ▶ Conditions:
 - ▶ Project is completed according the assignment → credit award.
 - ▶ Project is the best one → winning the competition.
 - ▶ Prizes for the first three winners.



-
- 1 Introduction, information on the course, MATLAB environment, basic math operators
 - 2 Vectors and matrices
 - 3 Vectorization, indexation, relational and logical operators, **homework (10 points)**
 - 4 Loops and program branching
 - 5 Functions, debugging, **homework (10 points)**
 - 6 Cells, strings, structures, **short test (15 points)**
-
- 7 Visualization, **project choice**
 - 8 Static GUI
 - 9 Dynamic GUI, **homework (10 points)**
 - 10 Timer, sorting operations, profiler
-
- 11 Set operators, error treatment
 - 12 Bonuses: Symbolic math, data processing (MATLAB \rightarrow L^AT_EX)
 - 13 Data processing
 - 14 **Final test (20 points), presentation of projects (50 points)**
-

Schedule



Week	Date	Teacher(s)	Lecture
1	19. 9.	MC + JT	1 (intro)
2	26. 9.	MC + JL	2 (vectors and matrices)
3	3. 10.	MC + JT	3 (indexing)
4	10. 10.	MC + JL	4 (loops, branching)
5	17. 10.	JT + JL	5 (functions1)
6	24. 10.	JT + JL	6 (functions2)
7	31. 10.	VA + JT	7 (strings)
8	7. 11.	VA + VN	8 (visualization)
9	14. 11.	VA + VN	9 (static GUI)
10	21. 11.	VA + VN	10 (dynamic GUI)
11	28. 11.	VN	11 (timer, sorting operations)
12	5. 12.	VN	12 (set operators)
13	12. 12.	MC	13 (data processing)
14	9. 1.	All	14 (test, projects)



- ▶ The aim of the course is to teach you something – if the presentation is too fast, be heard.
- ▶ If you have an idea / proposal how to solve a problem in a more efficient way, put it forward.
- ▶ Can happen that the lecturer is not able to answer your question immediately. In that case the answer will be provided during the next lecture.



- ▶ MATLAB documentation.

▶ Online

- ▶ Attaway, S.: MATLAB – A Practical Introduction to Programming and Problem Solving, 3rd ed.
 - ▶ Available at Department's library.
- ▶ Hahn, B. H., Valentine, D. T.: Essential Matlab, 5th Ed.
 - ▶ Available at Department's library.
- ▶ Other literature and sources will be mentioned during the semester...

Questions?

B0B17MTB, BE0B17MTB – MATLAB
matlab@fel.cvut.cz

September 19, 2022
Winter semester 2022/23

This document has been created as a part of BE0B17MTB course.
Apart from educational purposes at CTU in Prague, this document may be reproduced, stored, or transmitted only with the prior permission of the authors.

Acknowledgement: Filip Kozák, Pavel Valtr, Michal Mašek.