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| **Software Engineering Institute**  | Semester 1. of the curriculum 2023-24-1  |
| Name of the subject:  | Code of the subject:  | Credits:  | Weekly hours:  |
|   | lec  | sem  | lab  |
| **Introduction to MATLAB programming**  | NSXBM1EMNF  | 4  | full-time  | 0  | 0  | 2  |
| Responsible person for the subject: Dr. SERGYÁN Szabolcs  | Classification: associate professor  |
| Subject lecturer(s):   |
| Prerequisites:  |   |   |
| Way of the assessment:  | mid-term grade  |   |   |
| **Course description**  |
| Goal:  | Acquiring the fundamental knowledge and applications related to MATLAB. It serves the dual purpose of teaching computer programming and providing a background in MATLAB.  |
| Course description:  | Variables, arrays, vectors and matrices; MATLAB functions, loops, decisions in MATLAB. Linear algebra with MATLAB; basics of 2-D plots, data visualization: frequencies, bar charts and histograms. File input/output operations.  |
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| **Lecture schedule**  |
| Education week  | Topic  |
| 1.  | Introduction to MATLAB: variables and the workspace  |
| 2.  | Arrays: vectors and matrices  |
| 3.  | Operators, expressions and statements  |
| 4.  | Functions  |
| 5.  | Loops, repeating with *for*  |
| 6.  | Decisions, selections   |
| 7.  | 1st midterm exam  |
| 8.  | File input/output  |
| 9.  | Elements of linear algebra with MATLAB  |
| 10.  | Advanced matrix operations   |
| 11.  | Introduction to graphics: 2-D graphs  |
| 12.  | Frequencies, bar charts and histograms  |
| 13.  | 2nd midterm exam   |
| 14.  | Summary, evaluation  |
| **Mid-term requirements**  |
| Conditions for obtaining a mid-term grade/signature  | Two midterms.  |
| **Assessment schedule**  |
| **Education week**  | Topic  |
| **7**  | Elements of MatLab  |
| **13**  | Linear algebra and basic graphics  |
| **14**  | Rewriting a classroom test  |
| **Method used to calculate the *mid-term grade*** (to be filled out only for subjects with mid-term grades)  |
| 89-100%: excellent (5) 76-88%: good (4) 63-75%: satisfactory (3) 51-62%: pass (2) 0-50%: fail (1)  |
| **Type of the replacement**  |
| Type of the replacement of written test/mid-term grade/signature  | One of the midterms can be replaced in the final week.  |
| **Type of the exam** (to be filled out only for subjects with exams)  |
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| **Calculation of the exam mark** (to be filled only for subjects with exams)  |
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| **​​Final grade calculation methods:​**  |
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| **References**  |
| Obligatory:  | J. Michael Fitzpatrick, Á. Lédeczi - Computer Programming with MATLAB, ebook, 2013.  |
| Recommended:  | B. Hahn and D. Valentine, Essential MATLAB for Engineers and Scientists, Elsevier, 2002.  |
| Other references:  |   |