Institute of Applied Mathematics			Semester 1. of the curriculum 2025-26-1			
Name of the subject:	Code of the subject:	Credits:	Weekly hours:			
				lec	sem	lab
Basic Mathematics	NMXMA1EBNF	6	full-time	2	2	0
Responsible person for the subject: Dr. Hegedüs, Gábor			Classification: associate professor			
Subject lecturer(s): Schmidt, Edit						
Prerequisites:	--					
Way of the assessment:	midterm grade					

Course description

Goal:	To provide the basic mathematical knowledge necessary for learning the disciplines of engineering computing, to develop conceptual skills and to support the development of an engineering mindset by synthesising and extending the secondary school mathematics curriculum.
Course description:	Trigonometry. Vector geometry. Arithmetic of complex numbers. Properties of real-valued functions of one variable, elementary functions. Sets and relations.

Lecture schedule	
Education week	Topic
1.	Trigonometric functions of angles of rotation, trigonometric identities, addition theorems.
2.	Geometric introduction to the concept of vectors. Basic operations on vectors. Decomposition of vectors, base, coordinates of a vector, coordinate system in plane and space.
3.	Scalar product of vectors and its calculation. Applications.
4.	Vector product and its calculation. Applications. Triple scalar product.
5.	Equation of a plane. Equations of a straight line.
6.	Number sets. Set of real numbers. Operations on real numbers, their properties. Solving equations on real numbers. n-th root, identities of n-th root.
7.	Interpretation and visualisation of complex numbers on the complex plane. Algebraic form of a complex number. Operations on complex numbers in algebraic form.
8.	Trigonometric and exponential forms of a complex number. Operations on complex numbers in these forms. Transition between different forms.
9.	n-th root on the set of complex numbers. Solving equations on complex numbers.
10.	Illustration of real-valued functions of one variable. Operations on functions. General properties of real-valued functions.
11.	Logarithm, identities of logarithm. Elementary functions, their properties and simple linear transformations.
12.	Sets. Operations on sets.
13.	Relations, functions. Special functions. Cardinality of infinite sets.
14.	Final test.

Midterm requirements	
Conditions for obtaining a mid-term grade/signature	Attendance at lectures and practice lessons (according to the Studies and Exams Code), and writing • the assessment test with a minimum of 60% (30 points), • the mini tests with a minimum of 50% (15 points), • the final test with a minimum of 50% (35 points).

Assessment schedule	
Education week	Topic
1.	Assessment test
10.	Retake of the assessment test
14.	Final test
Retake days	Retake of all types of tests (assessment test, summery mini test, final test)

Method used to calculate the midterm grade
Students will write a mini test at the beginning of each practice lesson, which includes easy problems based on the homework assignment of the previous sheet. (Students are also expected to solve the homework assignments set in Moodle system regularly.) You can score a maximum of 100 (106) points as follows: • 3 points per mini test, of which the 10 best results will be taken into account, i.e. max. 30 points (MT); • a maximum of 70 points may be scored on final test (FT); • (1 point per Moodle test, i.e. max. 6 extra points (E).) Calculation of the final score of the semester: MT+FT+E. (The mini tests, the final test and the assessment test must also be successful – see above the midterm requirements– to obtain at least a pass (2) midterm mark. A student whose absences from either lectures or practice lessons exceed the limit allowed in the Studies and Exams Code or who has not written neither the final test nor the assessment test successfully will be banned.

Type of the replacement	
Type of the replacement of written test/mid-term grade/signature	Assessment test can be made up in week 10. Unwritten or unsuccessful tests (assessment test, summary mini test or final test) can be made up on the day designated for the retake, one of the first three days of the examination period. (A student who wants to improve their scores can also rewrite the final test.) A student who is not banned, but has obtained an unsatisfactory midterm mark may attempt to correct it by rewriting either the assessment test or an extended final test once during a specified part of the examination period. In the latter case you can score a maximum of 80 points of which 50% must be reached to pass.

Type of the exam

Calculation of the exam mark

Final grade calculation methods:
0 - 49: fail (1) 50 - 61: pass (2) 62-73: satisfactory (3)

74 - 85: good (4)
86 - 100: excellent (5)
A student who obtained a midterm mark in the examination period will get a pass (2).

References	
Obligatory:	https://elearning.uni-obuda.hu
Recommended:	
Other references:	