Course unit title:	**SELECTED CHAPTERS FROM MATHEMATICS**
Course code:	**23005209**
Study programme:	**Automotive Production**
	Industrial Mechatronics
	Mechanical Engineering

Study period:	**1st year, WT 2025/2026**
Faculty:	**Faculty of Mechanical Engineering**
Level of study:	**Bachelor**
Form of study:	**Full time**
Evaluation:	**Graded credit test**
Number of credits:	**2**

Guaranteeing department:	**DEPARTMENT OF APPLIED MATHEMATICS AND INFORMATICS**
Guarantor:	**prof. RNDr. Martin BAČA, CSc.**

Week	Lectures Number of hours: 0 per week	Tutorials Number of hours: 2 per week
1.		Matrices, operations with matrices. Determinants, calculationg determinants.
2.		Gaussian elimination method. Cramer's rule. Inverse of a matrix.
3.		Domain of a function. Properties of functions. Inverse functions.
4.		Limit of a function.
5.		Derivative of a function.
6.		Higher-order derivatives. L'Hospital's rule.
7.		*Test.* Increasing and decreasing functions. Local extrema.
8.		Concavity and points of inflection.
9.		Standard integrals and rules of integrations.
10.		Integration by substitution. Integration by parts.
11.		Integration of rational functions.
12.		Integration of irrational functions.
13.		*Test.* Integration of rational function of sine and cosine.

Recommended reading:

1. Bača, M., Feňovčíková, A.: Mathematics 1, C-PRESS, Košice, 2010.

2. Andrejiová, M., Kimáková, Z.: Matematika 1, Technická univerzita v Košiciach, 2024 (in Slovak).

3. Eliáš, J., Horváth, J., Kajan, J.: Zbierka úloh z vyššej matematiky 1. a 2. časť, Alfa, Bratislava, 1995 (in Slovak).

4. Šoltés, V., Juhásová, Z.: Zbierka úloh z vyššej matematiky I, Olympia, Košice, 1992 (in Slovak).

Evaluation:

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EVALUATION

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1st test:	**50 points**
2nd test:	**50 points**
Graded credit test:	**total points 100, required minimum 51**

The necessary condition for obtaining a course credit is to write down homework assignments.

Attendance of classes is compulsory.

Košice, 18th September, 2025

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Signature of guarantee

You can find these information on webpage
http://www.sjf.tuke.sk/kamai/students/syllabi