Tárgytematika

Félév: 2021/22/1 **Tárgynév:** Műszaki matematika informatikusoknak 1. **Tárgykód:** IVB291ANMI

Felelős szervezet neve:	Informatika és Villamos Intézet
Felelős szervezet kódja:	MIK-IV
Tárgyfelelős neve:	Szegő Dóra
Tárgy követelménye:	Vizsga
Tárgy heti óraszáma:	2/0/0/2
Tárgy féléves óraszáma:	10/0/0/10

Oktatás célja:

Introduction, Learning Outcomes

Upon completion of this course the student should be able to: **interpret**, and **put into practice**

1. elementary functions in one variable,
2. sequences of real numbers
3. differential calculus of functions.

Students will learn the basics of mathematics, enabling them to interpret and understand engineering sciences and through solving elementary tasks they will deepen their basic theoretical knowledge in the field of engineering. The practical sessions are designed to complement the requirements of different specialisations.

Tantárgy tartalma:

Brief Syllabus

This lecture and practical based course aims to give students a solid mathematics basis through covering the following topics: sets of numbers (natural, integer, rational, real and complex numbers); vectors and operations with vectors, scalar and vector products and their applications; sets and operations with sets; definition of functions; presentation of elementary functions; polynomials; rational functions; algebraic functions, trigonometric and logarithmic functions. Sequences of real numbers (definition of monotonicity, limit, convergence and divergence); limit and continuity of functions; types of discontinuity; definition of tangents; differential calculus of functions in one variable, differential coefficient, derivatives, relations between differentiability and continuity; rules of derivation, derivatives of elementary functions; osculating circles, tangent of the plane curve at a given point.

Planned schedule

1. Basic concepts of mathematics: definition, theory, proof, symbols of mathematics. Real numbers, sets and operations with sets.

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Tantárgy tartalma:

2. Complex numbers: operations in algebraic form
3. Complex numbers: operations in trigonometrical and exponential form
4. Definition of mappings, functions, presentation of elementary functions operations on functions
5. Inverse function, classifying functions, Logarithmical and exponential function
6. Basic trigonometric constructions, trigonometric function and their inverses.
7. **1st test**
8. *Autumn break – no class*
9. *Day of the dead – no class*
10. Sequences of real numbers
11. Limit and continuity of functions
12. Differential coefficient, derivative
13. Relations between differentiability and continuity Rules of derivation, derivatives of elementary functions
14. **2nd test**
15. Corrections

Számonkérési és értékelési rendszere:

Evaluation + Grading

Class presence is compulsory.

In order to get a Signature the student has to:

- Attend class. If the student misses over 30% of the total number of classes, the signature will be denied. Being late by over 10 minutes constitutes missing.
- Write both tests and achieve over 50% on the two combined, over 40% each. If the student misses one or both tests, they can be retaken in the last week of the study period. The same applies to improving previous grades.

Grading will follow the course structure with the following weighting:

1. Midterm tests: 50%
2. Final exam: 50%. A minimum of 55% is required to pass the exam.

Offered exam grade: **over 65%** during the study period.

Grading scale

Numeric grade	5	4	3	2	1

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Számonkérési és értékelési rendszere:

Evaluation in points	89-100%	77-88%	76-66%	55-65%	0-54%

In the case of an illness or family emergency, the student must present a valid justification, such as a doctor's note.

Kötelező irodalom:

Required Reading and other Materials will be equivalent to:

- GEORGE B. THOMAS, JR.: THOMAS' CALCULUS, PEARSON ADDISON WESLEY, 2005.