



Tárgytematika

Félév: 2021/22/2

Tárgynév: Mathematics 2.

Tárgykód: EPE076ANEM

Felelős szervezet neve:	Építész Szakmai Intézet
Felelős szervezet kódja:	MIK-EP
Tárgyfelelős neve:	Dr. Perjésiné Dr Hámori Ildikó Viktória
Tárgy követelménye:	Vizsga
Tárgy heti óraszám:	1/2/0/0
Tárgy féléves óraszám:	5/10/0/0

Oktatás célja:

Introduction, Learning Outcomes:

The lectures teach some elements of important mathematical techniques that are used in an architect's practice.

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

1. Plotting the graph of simple functions of one variable
2. Differentiating functions
3. Finding the antiderivative; calculating definite integrals
4. Calculating areas and volumes using integration
5. Calculating the center of mass using integration.

Tantárgy tartalma:

General Course Description and Main Content:

Brief Syllabus: The course aims to give architect students a solid mathematical basis, through lectures and practical classes, by covering the following topics:

- Graphs of elementary functions
- Domain of a function, continuity, limits
- Differentiation of elementary functions
- Rules of differentiation
- Integral of elementary functions
- Rules of integration
- Application of integration and differentiation (area, volume, the center of mass)
- Differentiation and integration of multivariate functions

Students learn the basics of mathematics enabling them to interpret and understand architectural sciences and through solving elementary tasks they deepen their basic theoretical knowledge in the field of architecture.

Methodology:



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Tantárgy tartalma:

The presentations give an introduction to important mathematical techniques of exercise solving and the basic theory of differentiation and integration. Equal emphasis is given to learning new mathematics and to learning how to construct and write down correct mathematical arguments. During the course, students learn to apply differentiation and integration techniques to visualize functions, solve geometric optimization problems, calculate the area between curved lines and calculate the volume of simple bodies.

Schedule:

Study period in 15 weeks: 7 February - 21 May 2022

1. Sequences: boundedness, convergence, limit
2. Finding the limit of sequences
3. Graph of polynomials, exponential, sine, cosine functions, inverse functions
4. Basic properties of functions, transformations
5. Derivative of basic functions; rules of differentiation: product and quotient rule, chain rule
6. Applications of differentiation: tangent line, finding the local maximum/minimum, describing/plotting the graph of a function
7. Revision before test; Midterm Test in the practice class
8. Indefinite integral, integration techniques
9. Definite integral, Riemann sum, Newton-Leibniz theorem
10. Applications of integration I: area under and between curves
11. (Spring break)
12. Applications of integration II: volume, centre of mass
13. Bivariate functions: domain, partial derivatives, directional derivatives and gradient vector
14. Revision before test; Final Test in the practice class
15. Double integrals: domain, changing the order of integration

Retake of Tests in the 1st week of the exam period (23-27 May 2022).

Exams are possible in the exam period that starts on 23 May 2022.

Attendance:

Attending all classes is required. In case of absence from more than 30% of the total number of lessons will be grounds for failing the class. To be in class at the beginning time and stay until the scheduled end of the lesson is required, tardiness of more than 20 minutes will be counted as an absence.

Számonkérési és értékelési rendszere:

Evaluation and Grading:

Grading will follow the course structure with the following weight:

1. Tests 100%



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Számonkérési és értékelési rendszere:

2. Proposed exam grade: over 40 % during the study and correction period.
3. Written exam in the exam period. A minimum of 40% is required to pass the exam. Weight: Tests 50% + Exam 50%

Grading scale:

Numeric Grade:	5	4	3	2	1
Evaluation in points:	85%-100%	70%-84.9%	55%-69.9%	40%-54.9%	0-39.9%

Students with special needs:

Students with special physical needs and requiring special assistance must first register with the Dean of the Students Office. All reasonable requests to provide an equal learning environment for all students is to be assured.

Kötelező irodalom:

Required reading and other materials:

- Lecture notes provided during the course;
- http://www.columbia.edu/itc/sipa/math/calc_rules_func_var.html
- <http://tutorial.math.lamar.edu/Classes/CalcIII/QuadricSurfaces.aspx>