Level: Undergraduate Vocational Studies in Optometry	
Course title: Mathematics	
Status: obligatory	
ECTS: 6	
Requirements: none	

Learning objectives

The aim of course is to enable students to apply advanced mathematical knowledge from linear algebra, functions and integrals in physics.

Learning outcomes

After taking the course, the student should have developed:

General abilities: basic knowledge of this field, following the literature, analysis of various solutions and the choice of the most adequate solution, application in practice and other subjects.

Subject-specific abilities: student will be able to overcome difficulties caused by transition from elementary to advance mathematical thinking, applying mathematical modelling process on the physical problems.

Syllabus

Theoretical instruction

- Elements of linear algebra. Matrices, determinants, systems of linear equations, vectors.
- Functions. Basic notions. Elementary functions: quadratic, rational, logarithmic, exponential and trigonometric functions as the mathematical models for real word problems.
- Derivative of a function. Examination and the graphs of functions .
- Indefinite integrals. Properties of indefinite integral. Change of variables. Integration by parts.
- Definite integral. Area problem. Definite integral. Properties of definite integral.
- The applications of integral.
- Differential equations.
- Mathematical modelling by using dynamic software.

Practical instruction

Problem solving.

Weekly teaching load				Other:
Lectures: 3	Exercises: 2	Other forms of teaching:0	Student research: -	**-**