Study programme: BSc in Biology

Level: bachelor

Course title: Mathematics with Statistics

Lecturer: dr Ljiljana Cvetković

Status: obligatory

ECTS: 7

Requirements: none

Learning objectives

Introduction to the basic elements of classical mathematics and basic methods of applied mathematics. Introduction to basic statistical tools and statistical inference.

Learning outcomes

Studnets will develope capability to independently model simple phenomena in biology, as well as to study mathematical models of complex phenomena with understanding.

Syllabus

Theoretical instruction

Systems of linear equations. Vectors and matrices. Differential calculus. Integral calculus. Differential equations. Numerical solution of ordinary and partial differential equations. Mathematical models in biology. Descriptive statistics: collection, processing and presentation of statistical data. Population and sample. Measures of central tendency. Measures of dispersion. Random variables. Distribution. Inferential statistics: inference from sample to population. Confidence intervals. Hypothesis testing. Correlation and regression.

Practical instruction

Exercises through concrete examples from practice that completely follow the lectures.

Literature

1. Agresti, A., Franklin, C. (2007): Statistics: The Art and Science of Learning From Data. Prentice Hall.

2. Sullivan, M. (2007): Statistics:Informed Decisions Using Data 2ed. Prentice Hall.

3. Cvetković, LJ. (1996): Matematika sa statistikom. PMF, Institut za matematiku, Novi Sad.

4. Cvetković, LJ., Kostić, V. (2002): Matematika - zbirka zadataka. Symbol, Novi Sad.

5. Cvetković, LJ., Lozanov-Crvenković, Z. (2002): Verovatnoća i statistika - zbirka zadataka. Futura publikacije, Novi Sad.

Weekly teaching load

Lectures:	Exercises	Other forms of teaching:	Student research:	Other:	
3	3				

Teaching methodology

Lectures followed by numerous examples. Students work independently on exercises. Assessment of knowledge - tests.

Grading method (maximal number of points 100)					
Pre-exam obligations	points	Final exam	points		
Colloquia	60	Oral exam	40		