Univerza v Mariboru
University of Maribor

Fakulteta za naravoslovje in matematiko

UČNI NAČRT PREDMETA / SUBJECT SPECIFICATION	
Predmet:	**Osnove linearne algebre in vektorske analize**
Subject Title:	Basic linear algebra and vector analysis

Študijski program Study programme	Študijska smer Study field	Letnik Year	Semester Semester
Fizika Physics		1	**2**

Univerzitetna koda predmeta / University subject code:

Predavanja Lectures	Seminar Seminar	Sem. vaje Tutorial	Lab. vaje Labor work	Teren. vaje Field work	Samost. delo Individ. work	ECTS
60		45			135	**8**

Nosilec predmeta / Lecturer: Iztok Banič

Jeziki / Languages:	
Predavanja / Lecture:	Slovensko / slovene
Vaje / Tutorial:	Slovensko / slovene

Pogoji za vključitev v delo oz. za opravljanje študijskih obveznosti:

Priporočeno je predznanje maturitetnega kurza matematike.

Prerequisits:

Matura-level knowledge of mathematics is recommended.

Vsebina:

Analitična geometrija trirazsežnega evklidskega prostora.
Vektorji, skalarni in vektorski produkt, norma.
Matrike, determinante, rang in lastne vrednosti matrik.
Linearni operatorji in povezava operatorjev z matrikami.
Funkcije več spremenljivk, parcialni odvodi, ekstremi.
Gradient, divergenca, rotor.

Content (Syllabus outline):

Analytical geometry of the three-dimensional Euclidean space.
Vectors, the dot and cross products, the norm.
Matrices, determinants, rank and eigenvalues of matrices.
Linear operators and relations between operators and matrices.
Functions of several variables, partial derivatives, maxima and minima.
Gradient, divergence and curl.

Temeljni literatura in viri / Textbooks:

1. Vidav: *Višja matematika I, II, III*. Ljubljana, DZS, 1974
2. J. Grasselli: *Linearna algebra. Linearno programiranje.* Ljubljana, DMFA Slovenije,1994
3. M. R. Spiegel: Schaum's Outline of Theory and Problems of Vector Analysis and an Introduction to Tensor Analysis, New York, McGraw-Hill, 1959
4. S. Lipschutz: *3000 Solved Problems in Linear Algebra.* New York: McGraw-Hill,1988

Cilji:

Študentje usvojijo osnovne pojme in metode linearne algebre, ki jih potrebujejo pri nadaljnjem študiju fizike.

Objectives:

Students acquire basic knowledge of linear algebra and vector ananlysis, essential for studying physics.

Predvideni študijski rezultati:	**Intended learning outcomes:**
Znanje in razumevanje. Znanje osnov linearne algebre in vektorske analize in praktična uporaba v fiziki. Prenesljive/ključne spretnosti in drugi atributi: Pridobljeno matematično orodje je osnova za študij fizike.	Knowledge and understanding, ability to apply them. Knowledge of algebra and vector analysis and their application. Transferable/Key Skills and other attributes: Knowledge of mathematical tools that is essential for all the subjects on physics

Metode poučevanja in učenja:	**Learning and teaching methods:**
Predavanja Teoretične vaje	Lectures Theoretical exercises

Načini ocenjevanja:	Delež (v %) / Weight (in %)	**Assessment:**
pisni izpit (lahko v obliki dveh pisnih kolokvijev)	50	written examination (possibly as two mid-term examinations)
ustni izpit	50	*oral* examination