



**UČNI NAČRT PREDMETA / SUBJECT SPECIFICATION**

Predmet:  
**Ekonofizika**  
Subject Title:  
Econophysics

Študijski program Study programme	Študijska smer Study field	Letnik Year	Semester Semester
Fizika Physics		3	6

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
45		15			90	5

Nosilec predmeta / Lecturer:

Matjaž Perc

Jeziki / Predavanja / Lecture: Slovenski / Slovene  
Languages: Vaje / Tutorial: Slovenski / Slovene

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

Osnove teorije verjetnosti.

**Prerequisites:**

Basic knowledge of probability theory.

**Vsebina:**

Naključni sprehajalec in Berry-Esséen-ova teorema; Lévy-jevi stohastični procesi in limitni teorem stabilne porazdelitve; Stohastični modeli dinamike cen; Skale in korelacije v idealnih in realnih finančnih trgih; ARCH in GARCH procesi; Korelacije in antikorelacije med delnicami; Opcije v idealnih in realnih finančnih trgih.

**Content (Syllabus outline):**

Random walk and the two Berry-Esséen theorems; Lévy stochastic processes and the Limit theorem for stable distributions; Stochastic models of price dynamics; Scales and correlations in ideal and real financial markets; ARCH and GARCH processes; Correlations and anticorrelations between stocks; Options in ideal and real financial markets.

**Temeljni literatura in viri / Textbooks:**

- R. N. Mantegna in H. E. Stanley, *An introduction to econophysics* (Cambridge University Press, Cambridge, 2000).
- R. Cont in P. Tankov, *Financial modelling with jump processes* (Chapman & Hall, London, 2004).
- J. P. Bouchaud, M. Potters, *Theory of Financial Risk and Derivative Pricing* (Cambridge University Press, Cambridge, 2003)
- Chatterjee, S. Yarlagadda, B. K. Chakrabarti, *Econophysics of Wealth Distributions* (Springer-Verlag, Milan, 2005).

**Cilji:**

Ponuditi pregled ključnih konceptualnih pristopov, razvitih v okviru klasične fizike, katere je možno konstruktivno uporabiti v ekonomiji.

**Objectives:**

To provide an overview of key conceptual approaches, derived from classical physical sciences, which may be constructively applied in economy.

**Predvideni študijski rezultati:**

Znanje in razumevanje:

Obvladovanje ključnih fizikalnih pristopov, ki so uporabni v ekonomiji ter sposobnost samostojnega nadaljnjega dela v tej smeri.

Prenesljive/ključne spretnosti in drugi atributi:

Sposobnost integracije v ekonomsko okolje in prosperiranje.

**Intended learning outcomes:**

Knowledge and Understanding:

Mastering of key physical approaches that are applicable in economy as well as the capability of pursuing research in an independent and autonomous manner.

Transferable/Key Skills and other attributes:

The ability to integrate in an economic environment and prosper.

**Metode poučevanja in učenja:**

Predavanja, vaje in samostojno delo.

**Learning and teaching methods:**

Lectures, tutorial and individual work.

**Načini ocenjevanja:**

Delež (v %) /  
Weight (in %)

**Assessment:**

Ustni izpit  
Seminarska naloga

80%  
20%

Oral exam  
Written seminar work