UČNI NAČRT PREDMETA / COURSE SYLLABUS	
Predmet:	Dinamika iger
Course title:	Dynamics of Games

Študijski program in stopnja Study programme and level	Študijska smer Study field	Letnik Academic year	Semester Semester
Fizika 2. st.		1,2	2,3
Physics 2nd degree		1,2	2,3

Vrsta predmeta / Course type izbirni/ optional

Univerzitetna koda predmeta / University course code:

Predavanja Lectures	Seminar Seminar	Sem. vaje Tutorial	Lab. vaje Laboratory work	Teren. vaje Field work	Samost. delo Individ. work	ECTS
30	0	30	0	0	90	5

Nosilec predmeta / Lecturer: Matjaž Perc

Jeziki / Languages:	**Predavanja / Lectures:**	Slovenski / Slovene
	Vaje / Tutorial:	Slovenski / Slovene

Pogoji za vključitev v delo oz. za opravljanje študijskih obveznosti:	Prerequisits:
Osnove teorije dinamičnih sistemov in programiranja v poljubnem jeziku.	Basic knowledge of dynamical system's theory and programming skills in an arbitrary language.

Vsebina:	Content (Syllabus outline):
Kooperacija v različnih časovno-odvisnih dinamičnih sistemih, Pogoji za razvoj kooperacije – vpliv prostorske razširitve sistemov, Vplivi okolja na kooperacijo in korupcijo; Cvetenje korupcije v močno nepredvidljivih sistemih; Optimalna okolja in pogoji za kooperacijo, Vloga teorije iger.	Cooperation in different time-dependent dynamical systems, Conditions for the evolvement of cooperation – influences of spatial system extensions, Influences of the environment on cooperation and corruption, Blossoming of corruption in heavily unpredictable systems, Optimal environments and conditions for cooperation, Role of game theory.

Temeljni literatura in viri / Readings:

1. R. Axelrod, *The evolution of cooperation* (Basic Books, New York, 1984).
2. J. Hofbauer in K. Sigmund, *Evolutionary games and population dynamics* (Cambridge University Press, Cambridge, 1998).
3. J. W. Weibull, *Evolutionary Game Theory* (MIT Press, Cambridge, 1995).
4. J. Maynard Smith, *Evolution and the Theory of Games* (Cambridge University Press, Cambridge, 1982).

Cilji in kompetence:	Objectives and competences:
Ponuditi pregled ključnih fizikalnih mehanizmov, ki so vodili do evolucije kooperacije in korupcije v moderni družbi.	To provide an overview of key physical mechanisms that led to the evolution of cooperation and corruption in the modern society.

Predvideni študijski rezultati:	Intended learning outcomes:
Znanje in razumevanje: Poznavanje in razumevanje ključnih fizikalnih mehanizmov, ki so vodili do razvoja kooperacije in korupcije v moderni družbi.	Knowledge and Understanding: Mastering and understanding of key physical mechanisms that led to the evolution of cooperation and corruption in the modern society.

Prenesljive/ključne spretnosti in drugi atributi:	Transferable/Key Skills and other attributes:
Sposobnost napovedati uspeh različnih strategij v danih okoliščinah s pomočjo računalniških simulacij.	The ability to foretell the success of different strategies in a given environment by computer simulations.

Metode poučevanja in učenja:	**Learning and teaching methods:**
Predavanje in individualno raziskovalno delo.	Lectures and individual research work.

Načini ocenjevanja:	Delež (v %) / Weight (in %)	**Assessment:**
Seminarska naloga	90%	Written seminar work
Pisni ali ustni izpit	10%	Pisni ali ustni izpit

Reference nosilca / Lecturer's references:

GOSAK, Marko, PERC, Matjaž, KRALJ, Samo. The impact of static disorder on vibrational resonance in a ferroelectric liquid crystal. *Mol. cryst. liq. cryst. (Phila. Pa. : 2003)*, 2012, vol. 553, no. 1, str. 13-20, doi: 10.1080/15421406.2011.609343. [COBISS.SI-ID 18878472]

SZOLNOKI, Attila, PERC, Matjaž. Conditional strategies and the evolution of cooperation in spatial public goods games. *Phys. rev., E Stat. nonlinear soft matter phys. (Print)*, 2012, vol. 85, iss. 2, str. 026104-1-026104-7, graf. prikazi, doi: 10.1103/PhysRevE.85.026104. [COBISS.SI-ID 18940680]

WANG, Zhen, SZOLNOKI, Attila, PERC, Matjaž. Percolation threshold determines the optimal population density for public cooperation. *Phys. rev., E Stat. nonlinear soft matter phys. (Print)*, 2012, vol. 85, iss. 3, str. 037101-1-037101-4, doi: 10.1103/PhysRevE.85.037101. [COBISS.SI-ID 18986248]

LIU, Yongkui, CHEN, Xiaojie, ZHANG, Lin, WANG, Long, PERC, Matjaž. Win-stay-lose-learn promotes cooperation in the spatial prisoner's dilemma game. *PLoS one*, 2012, vol. 7, iss. 2, str. e30689-1-e30689-8, doi: 10.1371/journal.pone.0030689. [COBISS.SI-ID 18986504]

PERC, Matjaž. Sustainable institutionalized punishment requires elimination of second-order free-riders. *Scientific reports*, 2012, vol. 2, art. no. 344, 6 str., doi: 10.1038/srep00344. [COBISS.SI-ID 19071752]