

UČNI NAČRT PREDMETA / COURSE SYLLABUS	
Predmet:	Analitična mehanika
Course title:	Analytical Mechanics

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 2 nd 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
45	0	15	0	0	90	5

Nosilec predmeta / Lecturer: Milan Ambrožič

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

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

Predznanje iz Mehanike in Matematične fizike

Prerequisites:

Preknowledge in Mechanics and Mathematical physics.

Vsebina:

- Pregled osnovnih zakonov mehanike.
- Lagrangejeve enačbe.
- Centralne sile in problem dveh teles.
- Kinematika togega telesa.
- Nihanje.
- Hamiltonove enačbe.
- Zanimivi eksotični problemi.

Content (Syllabus outline):

1. Survey of the basic principles in mechanics.
2. Lagrange equations.
3. Central forces and 2-body problem.
4. Rigid body kinematics.
5. Vibrations.
6. Hamilton equations.
7. Interesting exotic problems.

Temeljni literatura in viri / Readings:

1. L. D. Landau, E. M. Lifshitz, Mechanics, Vol. 1 of Course in Theoretical Physics (Pergamon Press, Oxford, 1976).
2. H. Goldstein, C. Poole, J. Safko, Classical Mechanics (Addison Wesley, 2002).
3. G. M. Calkin, Lagrangian and Hamiltonian Mechanics (World Scientific, Singapore, 1998).

Cilji in kompetence:

Študenti usvojijo znanje s področja klasične in analitične mehanike.

Objectives and competences:

Students acquire knowledge from classical and analytical mechanics.

Predvideni študijski rezultati:

Znanje in razumevanje:

Globlje razumevanje osnovnih pojmov v mehaniki.

Prenesljive/ključne spretnosti in drugi atributi:

Rešitev problemov z matematičnimi orodji in celosten pristop k reševanju problemov.

Intended learning outcomes:

Knowledge and Understanding:

Deeper insight in the basic ideas of mechanics.

Transferable/Key Skills and other attributes:

Solving of problems with mathematical tools and gained global approach on solving a problem.

Metode poučevanja in učenja:

Predavanja Teoretične računske vaje
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Learning and teaching methods:

Lectures Theoretical exercises

Načini ocenjevanja:

2 pisna kolokvija ali pisni izpit ustni izpit	Delež (v %) / Weight (in %)	Assessment:
	50	2 written tests or written exam
	50	oral exam

Reference nosilca / Lecturer's references:

AMBROŽIČ, Milan, KOSMAČ, Tomaž. Optimization of the bend strength of flat-layered alumina-zirconia composites. *J. Am. Ceram. Soc.*, vol. 90, 2007, str. 1545-1550. [COBISS.SI-ID [20741415](#)]

AMBROŽIČ, Milan, KRALJ, Samo, VIRGA, Epifanio G. Defect-enhanced nematic surface order reconstruction. *Phys. rev., E Stat. nonlinear soft matter phys. (Print)*, 2007, vol. 75, no. 3, str. 031708-1-031708-9. [COBISS.SI-ID [20736807](#)]

CVETKO, Matej, AMBROŽIČ, Milan, KRALJ, Samo. Competition between local disordering and global ordering fields in nematic liquid crystals. *Beilstein journal of organic chemistry*, 2010, vol. 6, no. 2, str. 1-14. <http://dx.doi.org/10.3762/bjoc.6.2>, doi: [10.3762/bjoc.6.2](https://doi.org/10.3762/bjoc.6.2). [COBISS.SI-ID [17410312](#)]

ZIDANŠEK, Aleksander, AMBROŽIČ, Milan, MILFELNER, Maja, BLINC, Robert, LIOR, Noam. Solar orbital power : sustainability analysis. *Energy (Oxford)*. [Print ed.], 2011, vol. 36, no. 4, str. 1986-1995. [COBISS.SI-ID [24602919](#)]

GORJAN, Lovro, AMBROŽIČ, Milan. Bend strength of alumina ceramics : a comparison of Weibull statistics with other statistics based on very large experimental data set. *J. Eur. Ceram. Soc.*. [Print ed.], 2012, vol. 32, no. 6, str. 1221-1227, doi: [10.1016/j.jeurceramsoc.2011.12.010](https://doi.org/10.1016/j.jeurceramsoc.2011.12.010). [COBISS.SI-ID [25578279](#)]