



Univerza v Mariboru

Fakulteta za naravoslovje
in matematiko

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
Enovit magistrski študijski program druge stopnje Predmetni učitelj	/	4	8
Five-year master's degree program Subject Teacher	/		

Vrsta predmeta / Course type

izbirni / elective

Univerzitetna koda predmeta / University course code:

Predavanja Lectures	Seminar Seminar	Vaje Tutorial	Lab. vaje Laboratory work	Terenske vaje Field work	Samost. delo Individ. work	ECTS
45		15			90	5

Nosilec predmeta / Lecturer:

Milan Ambrožič

Jeziki /

Predavanja / Lectures:

slovenski/Slovene

Languages:

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):

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

Temeljni literatura in viri / Readings:

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

Cilji in kompetence:

Študenti pridobijo 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

Learning and teaching methods:

Lectures
 Theoretical exercises

Delež (v %) /

Načini ocenjevanja:

Weight (in %)

Assessment:

Način (pisni izpit, ustno izpraševanje, naloge, projekt)		Type (examination, oral, coursework, project):
2 pisna kolokvija ali pisni izpit	50	2 written tests or written or exam
ustni izpit	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](#)]

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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](#)]