



OPIS PREDMETA / SUBJECT SPECIFICATION

Predmet:	Reševanje problemov v fiziki
Subject Title:	Problem Solving in Physics

Študijski program Study programme	Študijska smer Study field	Letnik Year	Semester Semester
FIZIKA PHYSICS		2	1

Univerzitetna koda predmeta / University subject code:

Predavanja Lectures	Seminar	Sem. vaje Tutorial	Lab. vaje Labor work	Teren. vaje Field work	Samost. delo Individ. work	ECTS
30	20				250	10

Nosilec predmeta / Lecturer:

Jeziki: Predavanja / Lecture: Slovenski / Slovene in/and angleški / English s prevodom v Slovenščino/with translation in Slovenian
Languages: Vaje / Tutorial:

Pogoji za vključitev v delo:

Ni posebnih zahtev.

Prerequisites:

None.

Vsebina:

Predavanja:

- osnove psihologije mišljenja in reševanja problemov
- reševanje problemov v fiziki
- strategije reševanja problemov v fiziki
- razvoj tehnik in spretnosti za reševanje problemov
- vrsti zastavljanja problemov
- evaluacija problemov v fiziki

Seminar:

- priprava, prezentacija in diskusija fizikalnih problemov
- evaluacija fizikalnih problemov

Contents:

Lectures:

- Psychological foundations of thinking and problem solving
- Problem solving in physics
- Strategies for solving physical problems
- Development of problem solving skills
- Spectrum in posing physics problems
- Evaluation of physics problems

Seminar:

- Preparation, presentation and discussion of physics problems
- Evaluation of physics problems

Temeljni študijski viri/Textbooks:

8. J. R. Anderson, Cognitive Psychology and Its Implications, Worth Publishers, 2005
9. R. E. Mayer, Thinking, Problem Solving, Cognition, Freeman and Co., New York, 1992
10. J. D. Bransford, B. S. Stein, The Ideal Problem Solver, Freeman and Co., New York, 1984
11. D. Scarl, How to Solve Problems: For Success in Freshman Physics, Engineering , and Beyond, Dosoris Prss, Glen Cove, New York 1993

Cilji

Cilj predmeta je pridobiti si znanje za razumevanje mišljenjskih procesov, ki potekajo ob reševanju fizikalnih problemov. Cilj je natrenirati metode in

Objectives:

The goal of the course is to provide for an understanding of the cognitive process which take place in solving (physics) problems. Different methods

strategije reševanja problemov. Študenti razvijejo sposobnosti za produkcijo in ocenjevanje novih fizikalnih problemov.

and strategies of problem solving are trained. The students develop skills to create and evaluate physics problems.

Predvideni študijski rezultati:

Znanja in razumevanja:
Študenti usvojijo in poglobijo znanje o trenutnih znanstvenih raziskavah na področju mišljenja in reševanja problemov s stališča kognitivne psihologije. Usvojijo različne strategije za reševanje problemov in razumejo različne lastnosti in namene fizikalnih problemov.
Prenosljive/ključne spretnosti in drugi atributi:
Zmožnost kritičnega presojanja fizikalnih problemov. Zmožnost ustvarjanja novih fizikalnih problemov za različne starostne stopnje.

Intended learning outcomes:

Knowledge and Understanding:
The students gain and deepen their knowledge about the current scientific status how thinking and problem solving is explained by cognitive psychology. They know different strategies for problem solving and understand distinctive features of physical problems.
Transferable/Key Skills and other attributes:
Ability for a critical judgment of physical problems.
Ability to create physical problems, in particular with regard to the age of students.

Metode poučevanja in učenja:

Predavanja, seminarji, skupinsko delo, individualno delo

Learning and teaching methods:

Lectures, seminars, group work, individual work

Načini ocenjevanja:

Delež (v %) /
Weight (in %)

Assessment:

Projekt priprave in evaluacije fizikalnih problemov	50 %	Project of preparation and evaluation of physics problems
Ustni zagovor	50 %	Oral exam