



Univerza v Mariboru
University of Maribor



Fakulteta za
naravoslovje in
matematiko

UČNI NAČRT PREDMETA / SUBJECT SPECIFICATION

Predmet:	Fizikalni eksperimenti 1
Subject Title:	Physics experiments 1

Študijski program Study programme	Študijska smer Study field	Letnik Year	Semester Semester
Fizika Physics		1	2

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
			55		65	4

Nosilec predmeta / Lecturer:

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

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

Opravljene laboratorijske vaje iz osnovnih merenj ali ekvivalentno. Potrebno je predznanje iz predmeta mehanika.

Prerequisites:

Done laboratory exercises on basic measurements or equivalent. Preknowledge of mechanics.

Vsebina:

Predavanja: teoretičen pregled vsebin laboratorijskih vaj.

Študent opravi 15 laboratorijskih vaj s področja mehanike: kinematika, dinamika, hidrostatične in hidrodinamične.

V projektni nalogi s področja mehanike študent obdeli zahtevnejšo merilno tehniko in pripravi ali izdela zahtevnejši eksperiment in o njem poroča.

Content (Syllabus outline):

Lectures: theoretical overview of the experiments.

Students perform 15 laboratory experiments from mechanics: kinematics, dynamics, hydrostatics, hydrodynamics.

In scope of the project work each student studies an advanced measurement technique and builds an advanced experiment and reports on the project.

Temeljni literatura in viri / Textbooks:

- 1) Interna navodila za izvedbo vaj/ Guidelines for of the experiments
- 2) Sirkevič, Koškin: *Priročnik elementarne fizike*. Ljubljana: TZS, 1988.
- 3) D. Halliday, R. Resnick, J. Walker, Fundamentals of Physics, 5. izdaja, (John Wiley & Sons, Inc., New York, 1997)
- 4) J. Strnad, Fizika, 1. del, (DMFA, Ljubljana, 2002)

Cilji:

Objectives:

Študentje ponovijo in poglobijo znanje, pridobljeno na predavanjih iz mehanike, ki je potrebno za uspešno izvedbo in razumevanje eksperimentalnih vaj. Pridobijo si primerne izkušnje in laboratorijske spretnosti, potrebne za samostojno delo pri demonstracijah in eksperimentalnih vajah. Navadijo se uporabljati ustrezno strokovno literaturo, svoje teoretično in računsko znanje in tudi druge informacijske vire. Usvojijo znanja, potrebna za pripravo kvantitativnega in kvalitativnega eksperimenta. Usposobijo se precizno in adekvatno poročati o svojih eksperimentalnih ugotovitvah.

Students refresh and extend their knowledge obtained from attending lectures of mechanics, especially topics that are essential for the successful and correct execution of laboratory work. Students also acquire experience and laboratory skills that is essential for an autonomous execution of demonstrative physics experiments related to above-outlined topics. Finally, they learn how to use their theoretical and practical knowledge, as well as information offered from secondary sources, to master problems that might occur during experimental work and report on their findings.

Predvideni študijski rezultati:

Znanje in razumevanje:

Razumevanje osnovnih procesov v naravi in sposobnost njihove demonstracije v primerno opremljenem laboratoriju.

Prenesljive/ključne spretnosti in drugi atributi:

Didaktični pristop pri obravnavi naravnih pojavov ter sposobnost prenesti znanje laiku; ali predlagati matematično ali fizikalno rešitev specifičnega problema, ter tako pripomoči k njegovi rešitvi in razvoju v raziskovalno orientiranem okolju.

Intended learning outcomes:

Knowledge and Understanding:

Understanding of basic processes in nature and the ability to demonstrate them in an appropriately equipped laboratory.

Transferable/Key Skills and other attributes:

A didactic approach to real-life phenomena and the ability to transfer this knowledge to a non-specialist; or to provide a detailed and accurate description of a particular problem and propose mathematically and physically motivated solutions, thus facilitating development in a research oriented environment.

Metode poučevanja in učenja:

Metodika obsega: teoretičen uvod v obravnavano snov ter samostojno izvedbo eksperimentov pod mentorstvom profesorja.

Learning and teaching methods:

They are based on: theoretical introduction to specific topics and an autonomous execution of experiments under the supervision of the professor.

Načini ocenjevanja:

Delež (v %) /
Weight (in %)

Assessment:

Opravljene laboratorijske vaje, izdelan in ustni zagovor vaj dnevnik vaj	20%	Done experiments and the lab diary, oral avocation of the experiments
Ustno ali pisno preverjanje pripravljenosti na vajo	20%	Oral or written assessment of readiness for the forthcoming experiment
Pisni kolokvij	20%	Written test
Projekt	20%	Project
Ustni in praktični izpit	20%	Oral and practical exam