



UČNI NAČRT PREDMETA / SUBJECT SPECIFICATION

Predmet:	Izbrana poglavja iz fizike okolja
Subject Title:	Selected Chapters from Environmental Physics

Študijski program Study programme	Študijska smer Study field	Letnik Year	Semester Semester
FIZIKA PHYSICS		1 ali 2	1 ali 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
20			20	35	375	15

Nosilec predmeta / Lecturer:

Jeziki / Languages:	Predavanja / Lecture:	slovenski/Slovenian in/and angleški s slovenskim prevodom/English with translation in Slovenian
	Vaje / Tutorial:	slovenski/Slovenian in/and angleški s slovenskim prevodom/English with translation in Slovenian

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

Predznanje dodiplomske fizike in predmetov na drugi stopnji Fizikalne meritve v okolju in Fizikalni procesi v ekosistemih.

Prerequisites:

Knowledge of undergraduate physics, and second degree courses Physical Measurements in Natural Environment and Physical Processes in Ecosystems.

Vsebina:

- Pregled fizikalnih modelov v okolju
Izbrana poglavja iz modeliranja v okolju: Širjenje polucije v vodi, zraku in zemlji
- Pregled fizikalnih meritev v okolju
Izbrana poglavja iz spektroskopskih metod, ki se uporabljajo za študij okolja, kot so: Masna spektroskopija, NMR spektroskopija, optična spektroskopija, laserska spektroskopija (Lidar), plinska kromatografija
- Uporaba preprostih fizikalnih modelov v okolju
Modeliranje transporta polucije v vodi, zraku in zemlji
- Uporaba preprostih fizikalnih meritev v okolju
Izbrane vsebine iz uporabe spektroskopskih metod v okolju. Meritve na terenu.

Content (Syllabus outline):

- Review of physics models in environment
Selected chapters from environmental modelling:
Pollution transport in water, air and soil
- Review of physics measurements in environment
Selected chapters from spectroscopic methods, which are applicable for environmental studies, such as: Mass spectroscopy, NMR spectroscopy, optical spectroscopy, laser spectroscopy (Lidar), gas chromatography
- Application of elementary physics models in environment
Modelling of pollution transport in water, air and soil
- Application of elementary physics measurements in environment
Selected chapters from application of spectroscopic methods in environment. Field measurements.

Temeljni literatura in viri / Textbooks:

- John Houghton, Nigel Mason, Peter Hughes, Randall McMullan, Ross Reynolds, Lester Simmonds, John Twidell, Introduction to Environmental Physics: Planet Earth, Life and Climate, CRC Press, Boca Raton 2001.
- Egbert Boeker, Rienk van Grondelle, Environmental Science: Physical Principles and Applications, John Wiley & Sons, New York 2001.
- E. Boeker, R. Grondelle, Environmental Physics, John Wiley & Sons, New York 1995.

- 4) R. J. H. Clark, R. E. Hester, Spectroscopy in Environmental Science, John Wiley & Sons, Chichester 1995.
 5) Mark A. Nanny, Roger A. Minear, Jerry A. Leenheer, Nuclear Magnetic Resonance Spectroscopy in Environmental Chemistry, Oxford University Press, 1997.
 6) Članki v revijah New Scientist, Scientific World in Computational Physics
 7) Na spletnih straneh Oddelka za fiziko objavljena elektronska gradiva / teaching material published on websites of Department of Physics

Cilji:

Študentje usvojijo znanja, potrebna za razumevanje in interpretacijo meritev polutantov v naravnem okolju, za samostojno izvajanje preprostih meritev in za modeliranje transporta polutantov.

Objectives:

Students achieve knowledge that is necessary for complex understanding and interpretation of pollutant measurements in natural environment, for independent performance of elementary measurements and for modelling the pollution transport.

Predvideni študijski rezultati:

Znanje in razumevanje:

Razumevanje spektroskopskih tehnik, ki se uporabljajo pri meritvah polutantov, in obvladovanje modelov širjenja polutantov.

Prenesljive/ključne spretnosti in drugi atributi:

Predmet pripravlja študenta za samostojno delo na fizikalnih projektih s področja ekologije in okoljevarstva.

Intended learning outcomes:

Knowledge and Understanding:

Understanding of spectroscopic techniques for measurement of pollutants and mastering the models of pollutant transport.

Transferable/Key Skills and other attributes:

Subject prepares the student for independent work on some physics projects in ecology and environmental protection.

Metode poučevanja in učenja:

Metodika obsega: predavanja, laboratorijske in terenske vaje v različnih naravnih okoljih.

Learning and teaching methods:

They are based on: lectures, laboratory and field work comprising also exercises in different natural environments.

Načini ocenjevanja:

Delež (v %) /
Weight (in %)

Assessment:

Način (pisni kolokvij, ustno izpraševanje, naloge, projekt)	Delež (v %) / Weight (in %)	Type (examination, oral, coursework, project):
projektna naloga	50	project
ustni izpit	50	oral examination