## UČNI NAČRT PREDMETA / COURSE SYLLABUS

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|---|---|
| **Predmet:** | **Računalnik v fiziki** |
| **Course title:** | **Computer in Physics** |

| Študijski program in stopnja<br>Study programme and level | Študijska smer<br>Study field | Letnik<br>Academic year | Semester<br>Semester |
|---|---|---|---|
| Enovit magistrski študijski program druge stopnje Predmetni učitelj | / | 1 | 1 |
| Five-year master's degree program Subject Teacher | / | | |

**Vrsta predmeta / Course type**  Obvezni/Obligatory

**Univerzitetna koda predmeta / University course code:**

| Predavanja<br>Lectures | Seminar<br>Seminar | Vaje<br>Tutorial | Lab. vaje<br>Laboratory work | Terenske vaje<br>Field work | Samost. delo<br>Individ. work | ECTS |
|---|---|---|---|---|---|---|
| 30 | | | 15 | | 45 | 3 |

**Nosilec predmeta / Lecturer:**  Matjaž Perc

| Jeziki /<br>Languages: | Predavanja/ Lectures: | slovenski / slovene |
|---|---|---|
| | Vaje / Tutorial: | slovenski / slovene |

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

**Prerequisits:**

| | |
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| Ni pogojev. | None. |

**Vsebina:**

**Content (Syllabus outline):**

Zgradba in delovanje računalnika. Računalnik pri delu v fiziki:risanje diagramov: različne oblike diagramov, prilagoditvene krivulje, prikaz napak, združevanje diagramov, osnovne računske tehnike, odvajanje in integriranje z računalniškimi orodji, priprava fizikalnega teksta, urejevalniki enačb, predstavitve,

shranjevanje in prenos podatkov med različnimi programi, pošiljanje podatkov,

Computer architecture and operation

Computer in physics diagram drawing: diagram types, fitting curves, error presentation, diagram joining, basic computer techniques,

numerical derivation and integration with the

computer tools, physics text preparation, equation editors, presentation, data shearing, storing and

| osnovne meritve z računalnikom, pregled računalniških orodij za fiziko | transmission, computer easurement, physics software tools |
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**Temeljni literatura in viri / Readings:**

- Dušan Kodek: Organizacija in arhitektura računalniških sistemov, Fakulteta za elektrotehniko Ljubljana, Ljubljana, 1988.
- David A Patterson, John L. Hennesy: Computer Architecture A Quantitative Approach, Morgan Kaufman Publishers, INC. San Mateo, California, 1991.
- Tanenbaum Andrew S.: Structured Computer Organization, Third Edition, Prentice-Hall, 1990.

Ostala literatura, ki se zaradi hitro razvijajočega področja spreminja, bo podana na predavanjih

| **Cilji in kompetence:** | **Objectives and competences:** |
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| Uporaba osnovnih računalniških orodij pri laboratorijskem delu in pri pisanju fizikalnih tekstov. | Application of software tool in laboratory work and creation of physics tex. |
|---|---|

| **Predvideni študijski rezultati:** | **Intended learning outcomes:** |
|---|---|

| **Znanje in razumevanje:** | **Knowledge and understanding:** |
|---|---|
| Študent zna z računalniškimi orodji obdelati in prikazati rezultate meritev. Pri strokovnem pisanju uporablja računalnik. | Student knows to work with the computer tools and evaluate the results. He/she uses computer in the physics vocation. |
| **Prenesljive/ključne spretnosti in drugi atributi:** | **Transferable/Key Skills and other attributes:** |
| Delo z računalnikom je posebej pomembno pri vseh laboratorijskih vajah, pri seminarjih in diplomski nalogi. | Work with the computer in laboratory, seminar work and diploma papers. |

| **Metode poučevanja in učenja:** | **Learning and teaching methods:** |
|---|---|

| Predavanja<br><br>Laboratorijsko del | Lectures<br><br>Laboratory work |
|---|---|

| **Načini ocenjevanja:** | Delež (v %) / <br><br>Weight (in %) | **Assessment:** |
|---|---|---|
| Način (pisni izpit, ustno izpraševanje, naloge, projekt) | **50** | Type (examination, oral, coursework, project): |

| Opravljene lab. vaje, izdelan dnevnik vaj in ustni zagovor laboratorijskih vaj | **50** | Done experiments, written experimental reports and oral avocation of the experiment |
|---|---|---|
| Pisni izpi | | Written exa |

**Reference nosilca / Lecturer's references:**

GOSAK, Marko, PERC, Matjaž, KRALJ, Samo. The impact of static disorder on vibrational resonance in a ferroelectric liquid crystal. *Mol. cryst. liq. cryst. (Phila. Pa. : 2003)*, 2012, vol. 553, no. 1, str. 13-20, doi: 10.1080/15421406.2011.609343. [COBISS.SI-ID 18878472]

SZOLNOKI, Attila, PERC, Matjaž. Conditional strategies and the evolution of cooperation in spatial public goods games. *Phys. rev., E Stat. nonlinear soft matter phys. (Print)*, 2012, vol. 85, iss. 2, str. 026104-1-026104-7, graf. prikazi, doi: 10.1103/PhysRevE.85.026104. [COBISS.SI-ID 18940680]

WANG, Zhen, SZOLNOKI, Attila, PERC, Matjaž. Percolation threshold determines the optimal population density for public cooperation. *Phys. rev., E Stat. nonlinear soft matter phys. (Print)*, 2012, vol. 85, iss. 3, str. 037101-1-037101-4, doi: 10.1103/PhysRevE.85.037101. [COBISS.SI-ID 18986248]

LIU, Yongkui, CHEN, Xiaojie, ZHANG, Lin, WANG, Long, PERC, Matjaž. Win-stay-lose-learn promotes cooperation in the spatial prisoner's dilemma game. *PLoS one*, 2012, vol. 7, iss. 2, str. e30689-1-e30689-8, doi: 10.1371/journal.pone.0030689. [COBISS.SI-ID 18986504]

PERC, Matjaž. Sustainable institutionalized punishment requires elimination of second-order free-riders. *Scientific reports*, 2012, vol. 2, art. no. 344, 6 str., doi: 10.1038/srep00344. [COBISS.SI-ID 19071752]