| | UČNI NAČRT PREDMETA/COURSE SYLLABUS |
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| **Predmet** | **Okoljska kemija** |
| **Course title** | **Environmental Chemistry** |

| **Študijski program in stopnja** **Study programme and level** | **Študijska smer** **Study field** | **Letnik** **Academic year** | **Semester** **Semester** |
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| Upravljanje z okoljem/ 1. stopnja | Ni smeri študija | 1. letnik | 1. |
| Environmental Management/ 1st Cycle | No study field | 1st year | 1st |

| **Vrsta predmeta/Course type** | obvezni/obligatory |
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| **Univerzitetna koda predmeta/University course code** | 1_UO_1_UN5 |
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| **Predavanja** **Lectures** | **Seminar** **Seminar** | **Sem. vaje** **Tutorial** | **Lab. vaje** **Laboratory work** | **Teren. vaje** **Field work** | **Samost. delo** **Individ. work** | **ECTS** |
|---|---|---|---|---|---|---|
| 30 | | | 30 | | 90 | 6 |

| **Nosilec predmeta/Lecturer:** | doc. dr. Ivan Jerman |
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| **Jeziki/ Languages:** | **Predavanja/Lectures:** | slovenski/Slovenian |
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| | **Vaje/Tutorial:** | slovenski/Slovenian |

| **Pogoji za vključitev v delo oz. za opravljanje študijskih obveznosti:** | **Prerequisites:** |
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| • Vpis v prvi letnik študijskega programa.<br>• Študent mora pred izpitom pripraviti in predstaviti seminarsko nalogo. | • A prerequisite for inclusion is enrolment in the first year of study.<br>• Students have to successfully prepare and present a seminar work before the examination. |

| **Vsebina:** | **Content (Syllabus outline):** |
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| • *Uvod* (osnove kemije, kemijske tehnologije in analizne kemije, sestavine ocene vplivov na okolje, osnovni koncepti, postopek izdelave, namembnost, domet, zgodovina, zakonodaja).<br>• *Ocena vplivov kot mehanizem varstva okolja* (načela in cilji varstva okolja, vloga ocene vplivov na okolje v upravnih postopkih, praksa v svetu). | • *Introduction* (basic chemistry, chemical technology and analytical chemistry, components of EIA, basic concepts, manufacturing process, purpose, scope, history, legislation).<br>• *Impact assessment as a mechanism for environmental protection* (principles and objectives of environmental protection, the role of environmental impact assessment in administrative procedures, worldwide practice). |

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| • *Poročilo o vplivih na okolje* (format-vsebina, prikazovanje rezultatov, veljavnost in uporabnost poročil).<br>• *Ocena vplivov na okolje in planiranje* (strateško planiranje, prostorsko – varovalno planiranje, vloga ocene vplivov na okolje pri gospodarskem planiranju).<br>• *Upravni vidiki ocene vplivov na okolje* (pravni red, upravni postopek, standardi, udeleženci v postopku, dovoljevanje, udeležba javnosti).<br>• *Toksikologija:* učinki (osnovna toksičnost, genotoksičnost), *toksikokinetika, razmerje med odmerkom in odzivom.*<br>• *Študije primerov:* Oozon poleti, naknadna obdelava izpušnih plinov,.. | • *Environmental Impact Report* (format-content, presentation of results, validity and usefulness of reports).<br>• *Environmental Impact Assessment and Planning* (Strategic Planning, Spatial Planning, Role of Environmental Impact Assessment in Economic Planning).<br>• *Administrative aspects of environmental impact assessment* (acquis, administrative procedure, standards, process participants, authorization, public participation).<br>• *Toxicology:* effects (basic toxicity, genotoxicity), toxicokinetics, dose-response relationship.<br>• *Case studies:* Ozone in summer, after treatment of exhaust gasses,.. |

**Temeljna literatura in viri/Readings:**

**Temeljna literatura/Basic literature**

- Gaffney, J. S. in Marley, N. A. (2020). *Chemistry of environmental systems: Fundamental principles and analytical methods. Izbrana poglavja:* 1 Introduction to Environmental Chemistry (stran 1-13), 4 Chemistry of the Stratosphere (stran 75-98), 5 Chemistry of the Troposphere (stran 103-127), 8 Chemistry of Surface and GroundWaters (stran 213-252), 10 Fossil and Biomass Fuels (stran 305-330), 11 Climate Change (stran 355-380).

**Priporočljiva literatura/Recommended literature**

- Kirn, A. (2004). *Narava, družba, ekološka zavest.* Ljubljana: Fakulteta za družbene vede.
- Manahan, S. E. (2001). *Fundamentals of environmental chemistry.* Boca Raton, Fla: Lewis Publishers.
- Glasson, J., Therivel, R. in Chadwick, A. (2007). *Introduction to environmental impact assessment.* Routledge, str. 423.
- Howard, A. G. (1998). *Aquatic Environmental Chemistry*. Oxford Science Publ.
- Manahan, S. E. (1994). *Environmental Chemistry.* Lewis Publishers, Inc.

| **Cilji in kompetence:** | **Objectives and competences:** |
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| *Učna enota prispeva predvsem k razvoju naslednjih splošnih in specifičnih kompetenc:*<br>• sposobnost poznavanja standardnih kemijskih procesov in postopkov v analizni kemiji,<br>• sposobnost obvladovanja razvoja in napredka na področju kemije okolja,<br>• sposobnost reševanja konkretnih delovnih problemov na področju | *The learning unit mainly contributes to the development of the following general and specific competences:*<br>• ability to know standard chemical processes and processes in analytical chemistry,<br>• ability to cope with the development and progress of environmental chemistry, |

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| kemije okolja z uporabo standardnih strokovnih metod in postopkov,<br>• poznavanje mehanskih in kemičnih lastnosti materialov, njihovo uporabo in metode recikliranja,<br>• razvoj strokovnih veščin in spretnosti na področju okoljske kemije,<br>• poznavanje, uporabljanje in spremljanje metode celovite analize polutantov v okolju in priprave poročila. | • ability to solve specific work problems in the field of environmental chemistry using standard professional methods and procedures,<br>• knowledge of mechanical and chemical properties of materials, their use and methods of recycling,<br>• development of professional skills in the field of environmental chemistry,<br>• knowledge, use and monitoring of the method of a comprehensive analysis of pollutants in the environment and preparation of the report. |

| **Predvideni študijski rezultati:** | **Intended learning outcomes:** |
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| *Študent/študentka:*<br>• opiše osnove kemije, kemijske tehnologije, analizne kemije in instrumentalnih metod,<br>• pojasni izredni pomen okoljske kemije v vsakodnevnem življenju posameznika in produkcijskih verigah in dejavnostih na različnih področjih,<br>• našteje glavne onesnaževalce vode, zraka in zemlje ter pretvorbene procese,<br>• opiše industrijsko ekologijo,<br>• predstavi oceno industrijskega vpliva na okolje,<br>• pripravi poročilo o rezultatih vplivov določenega procesa na okolje. | *Students:*<br>• describe the basic chemistry, chemical technology, analytical chemistry and instrumental methods,<br>• explain the importance of environmental chemistry in everyday life and production chains and activities on different areas,<br>• list major pollutants of water, air and soil and transformation processes,<br>• describe present assessment of industrial influence on the environment,<br>• prepare reports preparation above the influence of the certain process on the environment. |
| **Metode poučevanja in učenja:** | **Learning and teaching methods:** |
| • *predavanja* z aktivno udeležbo študentov (razlaga, diskusija, vprašanja, primeri, reševanje problemov),<br>• *laboratorijske vaje:* refleksija izkušenj, praktično reševanje več tipičnih problemov, predstavitev in zagovor rešitev, diskusija, sporočanje povratne informacije. | • *lectures* with active student participation (explanation, discussion, questions, examples, problem solving),<br>• *laboratory work:* reflection on experience, practical solving of several typical problems, presentation and defence of solutions, discussion, feedback. |

| **Načini ocenjevanja:** | Delež (v %)<br>Weight (in %) | **Assessment:** |
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| Načini:<br>• izpit<br>• izdelava, predstavitev in zagovor seminarske naloge | <br>60 %<br>40 % | Types:<br>• exam<br>• preparation, presentation and defence of the seminar paper |

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| Ocenjevalna lestvica: ECTS. | | Grading scheme: ECTS. |