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| Course title | AQUATIC TOXICITY TESTS | | | | | | |
| Code | ZDIB16 | | | | | | |
| Study | The postgraduate interdisciplinary university study programme <i>Environment Protection and Nature Conservation</i> | | | | | | |
| Semester | III. | | | | | | |
| ECTS | 5 | | | | | | |
| Course state | Elective | | | | | | |
| Professors | Izv. prof. dr. sc. Janja Horvatić, Associate Professor | | | | | | |
| Colaborators | - | | | | | | |
| Entrance conditions | - | | | | | | |
| Aim | The aim of this course is to understand the effects caused by known factors on the plant and animal test organisms in laboratory conditions, and their likely impact on the actual environment. | | | | | | |
| Learning outcomes | <p>Upon successful completion of this course, students will:</p> <ol style="list-style-type: none"> 1. Describe application and meaning of aquatic toxicity tests 2. Acquire knowledge on all types of standardized tests that are prescribed by national legalization and the EU 3. Acquire theoretical and practical experience in the application of biotests in the aquatic environment 4. Understand all key theoretical and practical aspects of processes related to identification, understanding and assessment of the influence of pollution on water and sediment. | | | | | | |
| Connections between students activity, learning outcomes and evaluation | Students activity | ECTS | Learning outcomes | Course activity | Evaluation methods | Points* | |
| | | | | | | min | max |
| | Attending lectures | | 1-4 | 1,5 | Records of participants | 6 | 10 |
| | Attending exercises | | 2-3 | 1 | Records and evaluation of carried out tasks | 12 | 20 |
| | Knowledge assessment (written exam) | | 1-4 | 1 | Evaluation of written exam | 18 | 30 |
| | Final exam | | 1-4 | 1,5 | Evaluation of oral exam | 24 | 40 |
| | Total | 5 | | | | 60 | 100 |
| Consultations | According to the needs of the student in agreement with the lecturer. | | | | | | |
| Teaching form | Lectures | | Seminars | | Exercises | | |
| No. of hours | 10 | | - | | 5 | | |
| Content | Test types. Test organisms. Algae and macrophytes in the aquatic toxicity tests. Algae as ecological indicators. Nutrients and algal growth potential in laboratory conditions. Laboratory bioassay. Trophic conditions and water toxicity: miniaturized bioassay. Individual display of metal and xenobiotic toxicity to algae. The Lemna test. Structural impairments of unicellular algae treated with waste waters. Aquatic invertebrates and fishes as test organisms. Field collection of animals and their maintenance in laboratory | | | | | | |

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| | conditions. Determination of mortality LC50 and LC100. Acute, Chronic and subchronic toxicity. Histopathological alterations. Biochemical alterations as the indicator of toxic intensity. Working with individual toxicants (metals, petrochemicals, volatile aromatic carbohydrates, pesticides). Statistical data analysis. |
| Compulsory literature | Rand, G.M., 2016. Fundamentals of Aquatic Toxicology: Effects, Environmental Fate, and Risk Assessment, 3rd. Edition, Taylor & Francis. OECD GUIDELINES FOR THE TESTING OF CHEMICALS Alga, Growth Inhibition Test http://www.oecd.org/chemicalsafety/risk-assessment/1948257.pdf OECD GUIDELINES FOR THE TESTING OF CHEMICALS- Revised proposal for a new guideline 221 Lemna sp. Growth Inhibition Test (http://www.oecd.org/dataoecd/16/51/1948054.pdf) |
| Optional literature | ISO 8692:2012 Water quality -- Fresh water algal growth inhibition test with unicellular green algae ISO 20079:2005 Water quality -- Determination of the toxic effect of water constituents and waste water on duckweed (Lemna minor) -- Duckweed growth inhibition test |
| Completion condition | Regular attendance of lectures and exercises. |
| Exam form | From all the elements of monitoring and assessment the student can achieve a maximum of 100 points, which makes up 100% of the grade. The grades are calculated as follows: monitoring and assessment of each student's progress during classes by the instructor makes up to 30% of the final grade, the written exam is 30% of the final grade and the oral exam is 40% of the final grade. Excused absences must be recorded. |
| Possible teaching languages | Croatian |
| Form of quality monitoring | A survey of student assessment of teaching. Analysis of students' performance on exams. |