

| NAME OF THE COURSE | | Instrumental Methods of Chemical Analysis | | | | |
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| Code | PMB731 | Year of study | 1 | | | |
| Course teacher | Ivica Ljubenkov, PhD, Associate Professor | Credits (ECTS) | 3 | | | |
| Associate teachers | Barbara Soldo, PhD, Assistant Professor Ivana Mitar, PhD, Assistant Professor | Type of instruction (number of hours) | L | S | E | F |
| | | | 15 | | 15 | |
| Status of the course | elective | Percentage of application of e-learning | 10% | | | |
| COURSE DESCRIPTION | | | | | | |
| Course objectives | Adopt and understand the basics principles and application of instrumental analytical methods of physico-chemical analysis. | | | | | |
| Course enrolment requirements and entry competences required for the course | Knowledge of basic analytical methods of instrumental analysis. | | | | | |
| Learning outcomes expected at the level of the course (4 to 10 learning outcomes) | <ul style="list-style-type: none"> explain the physico-chemical fundamentals of particular method of instrumental analysis, distinguish methods by types of testing select the appropriate test method according to the types of samples to be tested explane and interpret the results of analyzes | | | | | |
| Course content broken down in detail by weekly class schedule (syllabus) | <p>Lectures: Spectroscopy 1. Introduction to spectroscopic methods, instruments in spectroscopy (2 lessons) 2. UV-Vis, Fluorescence spectroscopy (2 lessons) 3. IR and Raman spectroscopy (1,5 lessons) 4. Atomic spectroscopy (1 lesson) 5. Mass spectrometry (1,5 lessons) 6. NMR (1 lessons) Chromatography 7. Introduction to chromatographic methods (TLC, column chromatography) (2 lessons) 8. Liquid chromatography -HPLC (size ex., ion, affinity) (1,5 lessons) 9. Gas chromatography –GC (1,5 lessons) 10. Electrophoresis, thermophoresis, isoelectric focusing (1 lesson)</p> <p>Exercises: Spectroscopy 1. UV/Vis and Fluorescence spectroscopy (3 hours) 2. IR and Raman spectroscopy (3 hours) 3. Electrophoresis (3 hours) Chromatography 4. HPLC-chromatography (3 hours) 5. GC- chromatography (3 hours)</p> | | | | | |
| Format of instruction | x lectures x seminars and workshops x exercises <input type="checkbox"/> <i>on line</i> in entirety <input type="checkbox"/> partial e-learning <input type="checkbox"/> field work | <input type="checkbox"/> independent assignments x multimedia x laboratory <input type="checkbox"/> work with mentor <input type="checkbox"/> (other) | | | | |

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| Student responsibilities | Students are required to attend classes (lectures and seminars 80%, laboratory practice and field work 100%) and actively participate in the teaching process. This will be recorded and evaluated in making a final assessment. | | | | | |
| Screening student work (name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course) | Class attendance | 0,5 | Research | | Practical training | 1 |
| | Experimental work | | Report | | (Other) | |
| | Essay | | Seminar essay | | (Other) | |
| | Tests | | Oral exam | 1,5 | (Other) | |
| | Written exam | | Project | | (Other) | |
| Grading and evaluating student work in class and at the final exam | Course content is divided into two units that students can pass through partial exams during semester or through a final exam at the end of the semester. The exam is considered passed if students achieve at least 50% of the total number of points. After passing the written part of the student acquires the right to exit the oral exam. The final grade is based on the rating of written and oral examination. The final grade is based on the evaluation of partial exams. Grades: <50% not satisfied; 50-60% successful (2) 60-70% good (3), 70-85% very good (4), 85-100% excellent (5). | | | | | |
| Required literature (available in the library and via other media) | Title | | | Number of copies in the library | Availability via other media | |
| | 1. D.A. Skoog, D.M. West, F.J. Holler, Fundamentals of Analytical Chemistry 2002. | | | 1 | | |
| Optional literature (at the time of submission of study programme proposal) | - | | | | | |
| Quality assurance methods that ensure the acquisition of exit competences | Quality of the teaching and learning, monitored at the level of the (1) teachers, accepting suggestions of students and colleagues, and (2) faculty, conducting surveys of students on teaching quality. | | | | | |
| Other (as the proposer wishes to add) | - | | | | | |