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| **Study program** Master Studies Chemistry |
| **Course title** Separation methods in chemistry 2 (H204C ) |
| **Name of lecturer/lecturers** Milan N. Mitić |
| **Type of course** Elective |
| **Number of ECTS allocated** 5 |
| **Course objectives**The main objective of the course is to provide to the student basic theoretical and practical knowledge of separation methods. |
| **Course outcomes**The student will be able to make a choice and apply the most suitable method for appropriate separation. |
| **SYLLABUS***Lectures*Introduction to chromatography. Division of chromatographic methods. Chromatographic parameters. Qualitative and quantitative chromatographic analysis. Liquid chromatography - high-performance liquid chromatography. Basic parts of the HPLC system. Ion exchange chromatography. Gas-liquid chromatography. Basic parts of the GC system. Solid-liquid extraction. General laws of mass transfer. Factors affecting the solid-liquid extraction process. Classic extraction methods: maceration, percolation, Soxhlet extraction. Modern methods of extraction. Microwave extraction. Microwave heating of solutions. Influence of different parameters and equipment for microwave extraction. Ultrasonic extraction. Cavitation processes. Influence of different parameters and equipment for ultrasonic extraction. Subcritical extraction. Water as an extractant for subcritical extraction. Mechanism, parameters and equipment. Supercritical extraction. Extraction with supercritical carbon dioxide. Mechanism, parameters and equipment. Solid-phase extraction. Principles, mechanism, application. Electrophoresis. Theoretical foundations of electrophoresis. Division of electrophoretic methods. Devices for electrophoresis. Selection of the appropriate separation method for quantitative analysis of real samples.*Laboratory work* 1. Extraction of bioactive components by the maceration process2. Multiple extraction of phenolic compounds3. Ultrasonic extraction of compounds from a real sample4. HPLC analysis of extracts. |
| **References**1. Gordana Milovanović, Hromatografske metode odvajnja, Belgrade 19852. Milan Mitić, Hromatografske metode, Niš, 2017. |
| **Active teaching classes** | **Lectures**  30 | **Laboratory work**  15 |
| **Teaching mode**Lectures and laboratory work |
| **ASSESSMENT METHODS AND CRITERIA (Max 100 points)** |
| **Pre exam duties** | **Points** | **Final exam**  | **Points** |
| Activity during lectures | 5 | Written examination | - |
| Practical teaching | 15 | Oral examination | 40 |
| Teaching colloquia | 40 |  |  |
| Seminar | - |  |  |