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| 1. Course title: Analytical chemistry I | | | | | |
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| 2. Code: | | 3. Type (lecture, practice etc.): lecture | | | |
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| 4. Contact hours: 4 hoursper week | | 5. Number of credits (ECTS): 5 | | | |
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| 6. Preliminary conditions (max. 3):  Completion of General and inorganic chemistry II lecture | | | | | |
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| 7. Announced:  fall semester,  spring semester, both | | | | | |
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| 8. Limit for participants: | | | | | |
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| 10. Responsible teacher (faculty, institute and department):  Dr. Attila Felinger, Dr. Ferenc Kilár (Faculty of Sciences, Institute of Chemistry, Department of Analytical and Environmental Chemistry) | | | | | |
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| 11. Teacher(s) and percentage: | | Dr. Attila Felinger | | 50 % | |
| Dr. Ferenc Kilár | | 30% | |
| Dr. Balázs Csóka | | 20% | |
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| 12. Language:English | | | | | |
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| 13. Course objectives and/or learning outcomes:  Objectives: The lecture intends to introduce students to the fundamentals of analytical chemistry and instrumental analysis.  Learning outcomes: students completing the course will have *knowledge* on classical and instrumental methods of quantitative and qualitative analysis. | | | | | |
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| 14. Course outline   1. The role of analytical chemistry. Qualitative and quantitative analyses. General treatment and quantitative description of equilibria in solutions. 2. The use of acid-base, precipitation, complex-formation and redox equilibria in analytical chemistry. 3. Sampling, sample preparation. Titrimetry. 4. Theory and application of neutralization titrations. 5. Applications of oxidation/reduction titrations. 6. Complex-forming titrations 7. Precipitation titration, gravimetry 8. Instrumentation, analogue and digital signals, errors 9. Potentiometry and conductometry 10. Voltammetry, amperometry 11. Molecular spectroscopy, UV-vis spectrophotometry 12. Fluorescence, phosphorescence, infrared spectroscopy 13. Atomic spectroscopy | | | | | |
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| 15. Mid-semester works  Individual homework during the semester. Two mid-term tests | | | | | |
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| 16. Course requirements and grading  Oral examination | | | | | |
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| 17. List of readings   1. D. C. Harris: Quantitative chemical analysis, 9th ed (Freeman & Co., 2016) | | | | | |
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| 18. Recommended texts, further readings   1. R. Kellner et al.: Analytical chemistry, 2nd ed (Wiley-VCH, 2004) | | | | | |
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| **Date** | April 28, 2017 | **Prepared by** |  | | |
| Dr. Attila Felinger, Dr. Ferenc Kilár  responsible teacher | | |
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| **Endorsed by** | | |  | | |
| Dr. László Kollár  program supervisor | | |