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| 1. Course title: Chemometrics | | | | | |
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| 2. Code: | | 3. Type (lecture, practice etc.): seminar | | | |
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| 4. Contact hours: 2 hoursper week | | 5. Number of credits (ECTS): 3 | | | |
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| 6. Preliminary conditions (max. 3):  Analytical chemistry I. lecture in parallel | | | | | |
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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 (Faculty of Sciences, Institute of Chemistry, Department of Analytical and Environmental Chemistry) | | | | | |
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| 11. Teacher(s) and percentage: | | Dr. Attila Felinger | | 100 % | |
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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 chemical data analysis. An overview is provided on the application of mathematical statistics, error analysis, and signal processing in chemical measurements.  Learning outcomes: students completing the course will have *knowledge* on mathematical statistics, data and error analysis, experimental design, and signal processing. They will be *able* evaluate measurement data. | | | | | |
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| 14. Course outline   1. Measueremt basics in analytical chemistry 2. Probability theory, distributions. 3. Hypothesis tests, t- and F-tests 4. Variance analysis 5. Calibration, linear regression 6. Calibration of multicomponent systems 7. Random and systematic errors 8. Propagation of random and systematic errors 9. Validation of analytical methods 10. Design of experiments 11. Simplex optimization 12. Analog and digital signals 13. Auto and cross correlation, convolution, Fourier transform | | | | | |
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| 15. Mid-semester works  Two mid-term tests during the semester. | | | | | |
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| 16. Course requirements and grading  Grading based on the scores of the mid-term tests. | | | | | |
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| 17. List of readings   1. J. N. Miller, J. C. Miller: Statistics and Chemometrics for Analytical Chemistry, 6th ed (Pearson Education Limited, 2010) | | | | | |
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| 18. Recommended texts, further readings   1. D. L. Massart et al: Handbook of Chemometrics and Qualimetrics, Part A & Part B, Elsevier, Amsterdam 1997. | | | | | |
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| **Date** | April 28, 2017 | **Prepared by** |  | | |
| Dr. Attila Felinger  responsible teacher | | |
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| **Endorsed by** | | |  | | |
| Dr. László Kollár  program supervisor | | |