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| 1. Course title: Green Chemistry | | | | | |
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| 2. Code: | | 3. Type (lecture, practice etc.): lecture | | | |
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| 4. Contact hours: 2 hoursper week | | 5. Number of credits (ECTS): 2 | | | |
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| 6. Preliminary conditions (max. 3):   * Organic Chemistry II, completed. | | | | | |
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| 7. Announced:fall semester, spring semester, both | | | | | |
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| 8. Limit for participants: 30 | | | | | |
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| 10. Responsible teacher (faculty, institute and department):  Tamás Kégl PhD (Faculty of Science, Institute of Chemistry, Department of Inorganic Chemistry) | | | | | |
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| 11. Teacher(s) and percentage: | | Dr. Tamás KÉGL | | 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 principles of green chemistry. An overview is provided on concepts and applications related to green and sustainable processes. The course gives an insight into the employment of two phase catalysis as well. Selected examples are shown covering the most important fields of green chemistry.  Learning outcomes: students completing the course will have *knowledge* on the principles of green chemistry, as well as on its most important applications. They will have a *competence* of joining to research projects related to green chemistry. Their positive *attitude* towards sustainability will be expected to increase significantly as well. | | | | | |
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| 14. Course outline   1. Green Chemistry: history, fundamentals and 12 principles. 2. Atom economy. One-pot multistep processes. 3. Fundamentals of catalysis related to Green Chemistry. Increase of selectivity, decrease of energy consumed. 4. Employment of supercritical solvents. 5. Applications of ionic liquids. 6. Syntheses in water phase. 7. Biphasic catalysis with various solvents (PEG, limonene, etc.). 8. Microwave assisted solventless reactions. 9. Reactions with immobilized catalysts. 10. Green pesticide chemistry. 11. Chemistry of recycling. Preparation of biodegradable materials. 12. Utilization of renewable raw materials. Sustainable chemistry. 13. Green industrial applications. | | | | | |
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| 15. Mid-semester works  One mid-semester test (week 8). | | | | | |
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| 16. Course requirements and grading  Written exam is based on lectures, accessible electronic sources and lecture materials. Grades will be established based on the exam (80%) and the mid-semester test (20%), which must be passed at least with acceptable grade. Failed mid-semesters tests can be repeated one time.  Grades:  0–50% fail  51–65% acceptable  66–75% average  76–90% good  91–100% excellent | | | | | |
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| 17. List of readings  – | | | | | |
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| 18. Recommended texts, for readings   1. R. Sheldon, I. Arends, U. Hanefeld.: Green Chemistry and Catalysis. WILEY-VCH, Weinheim, Germany, 2007. 2. P. T. Anastas (ed.): Green Catalysis. WILEY-VCH, Weinheim, Germany, 2009. | | | | | |
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| **Date** | 28 April, 2017 | **Prepared by** |  | | |
| Dr. Tamás KÉGL  responsible teacher | | |
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| **Endorsed by** | | |  | | |
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