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| 1. Course title: Topology | | | | |
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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): 3 | | |
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| 6. Preliminary conditions (max. 3): Analysis 2 lecture and seminar | | | | |
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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):  Péter Csorba PhD (Faculty of Science, Institute of Mathematics and Informatics, Department of Mathematics) | | | | |
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| 11. Teacher(s) and percentage: | | Dr. Peter CSORBA | | 100 % |
| Dr. Alice FIALOWSKI | | 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 the basic topological theorems and definitions. It gives the necessary background to understand algebraic topology.  Learning outcomes: Students completing the course will have *knowledge* on basic topological theorems and definitions, and they will be *able* use this knowledge. | | | | |
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| 14. Course outline   1. Basic topological definitions 2. Continuous maps. Constructions: subspace, quotient, product, function spaces 3. Separation axioms, Urysohn's lemma, Tietze extension theorem 4. Connected space, properties, path connectedness. Example of a connected but not path connected space 5. Countability axiom. M1, M2 and separable spaces, and their properties. Lindelöf's theorem, Urysohn's metrization theorem 6. Compactness, 7 almost equivalent definitions, compact metric spaces 7. Product of compact spaces, Tychonoff's theorem 8. Quotient spaces. Simplicial complexes, surfaces, Euler-characteristics 9. CW complexes. Homotopy, loops, fundamental group, covering spaces, lifting theorem 10. Computing fundamental groups of CW complexes, projective spaces 11. Fundamental group of product. Homotopy equivalence 12. Applications: Fundamental theorem of algebra, Brouwer fixed point theorem, hedgehog (hairy ball) theorem 13. Topological groups | | | | |
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| 15. Mid-semester works  Attending all lectures is highly recommended. | | | | |
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| 16. Course requirements and grading  Oral exam: student gets 2 theoretical questions and one exercise to solve. | | | | |
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| 17. List of readings | | | | |
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| 18. Recommended texts, further readings   1. J. Munkres: Topology, Prentice Hall, Incorporated, 2000 2. J. L. Kelley: General Topology. 1957, Princeton. | | | | |
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| **Date** | 13 April, 2017 | **Prepared by** |  | |
| Dr. Péter CSORBA  responsible teacher | |
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| **Endorsed by** | | |  | |
| Dr. László TÓTH program supervisor | |