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| **Study programmes**: Bachelor studies – Informatics | | | | |
| **Course name**: M170 – Introduction to computational topology | | | | |
| **Lecturers**: Siniša Vrećica, Aleksandar Vučić, Vladimir Grujić, Branislav Prvulović | | | | |
| **Status**: Optional | | | | |
| **ECTS**: 5 | | | | |
| **Attendance prerequisites**: M105, M106, M111, M120, M140 | | | | |
| **Course aims:** Getting to know basic concepts of (computational) topology. | | | | |
| **Course outcome**: Upon completion of the course, the student mastered the basic concepts and features of combinatorial topology: simplicial complexes, ordered sets, as well as ways to determine their most important invariants. The student is familiar with the basics necessary for the study of invariants of persistent homology. | | | | |
| **Course content**: Geometry of simplicial complexes. Polyhedra. Barycentric partitions. Ordered sets. Topological invariants: Euler's characteristic, fundamental group, homological groups. Computability – Smiths's normal form. Topological complexity of algorithms. | | | | |
| **Literature**:<br>1. M. Marjanović, S. Vrećica, Topologija, Zavod za izdavanje udžbenika, Beograd, 2011.<br>2. A. Hatcher, Algebraic Topology, Cambridge University Press, Cambridge, 2001. | | | | |
| **Number of hours: 5** | **Lectures: 2** | **Tutorials: 3** | **Laboratory: -** | **Research: -** |
| **Teaching and learning methods**: Frontal / Lectures / Tutorials | | | | |

| **Assessment (maximal 100 points)** | | | |
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| **Course assignments** | **points** | **Final exam** | **points** |
| Lectures | 20 | Written exam | - |
| Exercises / Tutorials | - | Oral exam | - |
| Colloquia | 20 | Written-oral exam | 60 |
| Essay / Project | - | | |