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| <b>Study programmes:</b> Bachelor studies - Mathematics  |                    |                     |   |
| <b>Course name:</b> RM09 - Design and analysis of algorithms   |                    |                     |   |
| <b>Lecturers:</b> Miodrag Živković and other teachers of the CS department   |                    |                     |   |
| <b>Status:</b> Compulsory  |                    |                     |   |
| <b>ECTS:</b> 5   |                    |                     |   |
| <b>Attendance prerequisites:</b> RM01  |                    |                     |   |
| <b>Course aims:</b> To acquire basic knowledge about the analysis and construction of algorithms, as well as about data structures.  |                    |                     |   |
| <b>Course outcome:</b> Upon completion of the course the student is able to apply the adopted knowledge about the analysis and design of algorithms to solve new problems.   |                    |                     |   |
| <b>Course content:</b> Mathematical induction as a method of algorithm design. Analysis of algorithms. Basic data structures. Algorithms on arrays and sets. Graphs. Geometric algorithms. Algebraic algorithms. Reductions of polynomial complexity and estimation of lower bound complexity. NP completeness. Parallel algorithms. |                    |                     |   |
| <b>Literature:</b><br>1. Miodrag Živković, Algoritmi, Matematički fakultet, Beograd, 2000.<br>(the teacher can choose another relevant current literature)   |                    |                     |   |
| <b>Number of hours:</b> 5  | <b>Lectures:</b> 3 | <b>Tutorials:</b> 2 | <b>Laboratory:</b> - <b>Research:</b> - |
| <b>Teaching and learning methods:</b> Frontal, group and practical.  |                    |                     |   |
| <b>Assessment (maximal 100 points)</b>   |                    |                     |   |
| <b>Course assignments</b>  | <b>points</b>      | <b>Final exam</b>   | <b>points</b>                           |
| Lectures   | -                  | Written exam        | -                                       |
| Exercises / Tutorials  | -                  | Oral exam           | -                                       |
| Colloquia  | 30                 | Written-oral exam   | 70                                      |
| Essay / Project  | -                  |                     |   |