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|  **UNIVERSITY OF NIŠ** |
| **Course Unit Descriptor** | **Faculty**  | **Faculty of Sciences and Mathematics** |
| **GENERAL INFORMATION** |
| Study program  | **Computer Science** |
| Study Module (if applicable) |  |
| Course title | **Methodology of Scientific Research** |
| Level of study | [ ] Bachelor [ ]  Master’s [x]  Doctoral |
| Type of course | [x]  Obligatory [ ]  Elective |
| Semester  |  [x]  Autumn [ ] Spring |
| Year of study  | first |
| Number of ECTS allocated | 2.00 |
| Name of lecturer/lecturers | **Miroslav Ćirić** |
| Teaching mode |  [x] Lectures [ ] Group tutorials [ ]  Individual tutorials [ ] Laboratory work [ ]  Project work [ ]  Seminar [ ] Distance learning [ ]  Blended learning [ ]  Other |
| **PURPOSE AND OVERVIEW (max. 5 sentences)** |
| The course provides an introduction to the basics of the methodology of scientific research, especially with the method-logy used in scientific research in mathematics and computer science, as well as an introduction to basic ways of using and preparing scientific publications. Upon completion of the course the student should master the general methods of scientific research in mathematics and computer science, and to be able to independently find the necessary scientific literature, as well as to independently present the results of their scientific research and prepare them for publication. |
| **SYLLABUS (brief outline and summary of topics, max. 10 sentences)** |
| Scientific knowledge, scientific theories, scientific research, scientific language, mathematical language, mathematical symbols, writing scientific articles. Methodology of deductive science, deductive method, deductive theory, theory terms, content, formalized and formal theory, the axioms of the theory. Inductive methods in science, verification of scientific theories, cognitive methods. The techniques of proof, rules of inference, proof and refutation, errors in reasoning, methods and strategies of proof, direct and indirect proofs, mathematical induction, mathematical definitions. Algorithm design, analysis of algorithms, algorithms efficiency, decidability and undecidability, intractable problems. Types of scientific publications, the use of scientific publications, scientific journals and databases, preparation of a scientific article, writing and defending a thesis, writing and giving a talk, using computer in the preparation of publica-tions, desktop and electronic publications, on-screen presentations, TeX, LaTeX, PostScript, PDF, HTML, MathML. |
| **LANGUAGE OF INSTRUCTION** |
| [x] Serbian (complete course) [ ]  English (complete course) [ ]  Other \_\_\_\_\_\_\_\_\_\_\_\_\_ (complete course)[ ] Serbian with English mentoring [ ] Serbian with other mentoring \_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| **ASSESSMENT METHODS AND CRITERIA** |
| **Pre exam duties** | **Points** | **Final exam** | **Points** |
| **Activity during lectures** | **10** | **Written examination** | **–** |
| **Practical teaching** | **20** | **Oral examination** | **70** |
| **Teaching colloquia** | **–** | **OVERALL SUM** | **100** |
| **\*Final examination mark is formed in accordance with the Institutional documents** |