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|  **UNIVERSITY OF NIŠ** |
| **Course Unit Descriptor** | **Faculty**  | **Faculty of Civil Engineering and Architecture** |
| **GENERAL INFORMATION** |
| Study program  | **Civil Engineering** |
| Study Module (if applicable) | Structural engineering |
| Course title | Algorithmic representation of problems in civil engineering |
| Level of study | Master’s  |
| Type of course | Elective |
| Semester  | Autumn  |
| Year of study  | 1st |
| Number of ECTS allocated | 5 |
| Name of lecturer/lecturers | Milan Gocić |
| Teaching mode | Lectures; Individual tutorials; Laboratory work  |
| **PURPOSE AND OVERVIEW (max. 5 sentences)** |
| Achieving knowledge of informatics and elements of the algorithm and object-oriented programming in the field of civil engineering. Acquiring the necessary knowledge in informatics, as well as the design and development of algorithmic structure for solving problems in the civil engineering. |
| **SYLLABUS (brief outline and summary of topics, max. 10 sentences)** |
| Theoretical teaching1. Introduction to informatics. 2. Models opinion. 3. Introduction to programming languages. 4. Algorithm: concept, design, and analysis. 5. Line, branched and cyclic algorithmic structure. 5. Instructions of the programming language Java. 6. Procedures. 7. Object-oriented programming. 8. Control structures in object-oriented languages. 9. The notion of class and object. 10. Inheritance, generalization, specialization. 11. Files. 12. Programming of numerical methods applied in the civil engineering. 13. Algorithmic solving problems in dynamics and kinematics. 14. Algorithmic problem solving in the civil engineering based on the Eurocode. 15. Presentation of projectsPractical teaching: Exercises1. Fundamentals of the Java programming language. 2. Line algorithmic structure. 3. If statement. 3. Cyclical algorithmic structure. 4. Procedures. 5. Practical examination (the first test). 6. Control structures in object-oriented languages. 7. The notion of class and object. 8. Inheritance, generalization, specialization. 9. Files. 10. Programming of numerical methods applied in the civil engineering. 11-12. Algorithmic solution of the problems of dynamics and kinematics. 13-14. Algorithmic solution of the problems in the civil engineering based on the Eurocode. 15. Practical examination (second test). |
| **LANGUAGE OF INSTRUCTION** |
| Serbian (complete course)  |
| **ASSESSMENT METHODS AND CRITERIA** |
| **Pre exam duties** | **Points** | **Final exam** | **points** |
| **Activity during lectures** | **10** | **Written examination** |  |
| **Practical teaching** | **40** | **Oral examination** | **30** |
| **Teaching colloquia** | **20** | **OVERALL SUM** | **100** |
| **\*Final examination mark is formed in accordance with the Institutional documents** |