|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **UNIVERSITY OF NIŠ** | | | | | | |
| **Course Unit Descriptor** | | **Faculty** | | | **Faculty of Civil Engineering and Architecture** | |
| **GENERAL INFORMATION** | | | | | | |
| Study program | | | | **Civil Engineering** | | |
| Study Module (if applicable) | | | | Hydraulic engineering | | |
| Course title | | | | Hydroinformatics | | |
| 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; Slaviša Trajković | | |
| Teaching mode | | | | Lectures; Individual tutorials; Laboratory work | | |
| **PURPOSE AND OVERVIEW (max. 5 sentences)** | | | | | | |
| Introduction to techniques and methods of hydroinformatics and its practical application in the field of hydrotechnics. Acquired methods and techniques in the field of hydroinformatics and the ability of students to apply them in other cases in the field of hydraulic engineering and later in engineering practice. | | | | | | |
| **SYLLABUS (brief outline and summary of topics, max. 10 sentences)** | | | | | | |
| Theoretical teaching  1. Introduction to Hydroinformatics. 2. Hydrological metadata: problems, standardization, markup languages. 3. Hidrological data models: concept, structure and purpose. 4. Models for the storage and collection of data. 5. Data formats. 6. XML. 7. Transfer of data using web services. 8. Data processing and analysis. 9. Presentation of data. 10. Data integration. 11. Extracting information. 12. Soft computing. 13. Artificial neural networks. 14. Genetic Algorithms. 15. Fuzzy logic.  Practical teaching: Exercises  1. Hidrological metadata. 2. ArcHydro model data. 3. The collection, use and storage of data. 4. Data formats: netCDF, SDTS. 5. XML. 6. Web services. 7. Sources of data. 8. Presentation of data. 9. Integration of data and extract information. 10. Regression methods. 11. Analysis of the cluster. 12. An example of the generation of time series of annual flow based on neural networks. 13. Genetic Algorithms. 14. Fuzzy logic. 15. The practical examination. | | | | | | |
| **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** | | | | | | |