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| **UNIVERSITY OF NIŠ** | | | | | | |
| **Course Unit Descriptor** | | **Faculty** | | | Faculty of Mechanical Engineering | |
| **GENERAL INFORMATION** | | | | | | |
| Study program | | | | Mechanical Engineering | | |
| Study Module (if applicable) | | | | Manufacturing & Information Technologies | | |
| Course title | | | | Knowledge Based Engineering Systems (KBES) | | |
| Level of study | | | | ☐Bachelor ☐ Master’s × Doctoral | | |
| Type of course | | | | ☐ Obligatory × Elective | | |
| Semester | | | | ×Autumn ☐Spring | | |
| Year of study | | | | Second | | |
| Number of ECTS allocated | | | | 10 | | |
| Name of lecturer/lecturers | | | | Dr Milos S Stojkovic | | |
| Teaching mode | | | | ×Lectures ☐Group tutorials ☐ Individual tutorials  ☐Laboratory work ☐ Project work × Seminar  ☐Distance learning ☐ Blended learning ☐ Other | | |
| **PURPOSE AND OVERVIEW (max. 5 sentences)** | | | | | | |
| *Course aim: Provide student with the necessary level of knowledge about Knowledge Based Engineering Systems (KBES) in order to prepare him for future research and developments in the field.*  *Course outcome: After the course completing and passing the exam, the student will be able to:*   1. *Identify the reasons and the pre-conditions for KBES application, define goals for a KBES,* 2. *Design elements of KBES, simulate and test their performance,* 3. *Apply techniques for applying KBES into the modern PLM system, in order to improve performance and to integrate complex production systems.* | | | | | | |
| **SYLLABUS (brief outline and summary of topics, max. 10 sentences)** | | | | | | |
| 1. **Introduction – reasons and location of KBES application** 2. **Knowledge representation models (aimed for engineering systems),**    1. **Models of formalized (strongly structured) knowledge,**    2. **Models of non-formalized knowledge,**    3. **Hybrid models of knowledge representation,** 3. **Models of computer aided reasoning (aimed for engineering systems)**     1. **Causal Reasoning,**    2. **Model-Based Reasoning,**    3. **Case-Based Reasoning,**    4. **Analogy Based Reasoning,**    5. **The time context in reasoning process,**    6. **Hybrid models of reasoning,** 4. **Models and methods for KBES application into the modern PLM systems (CAD/CAE/CAPP/CAM … systems),** 5. **5. Actual research challenges in the field.** | | | | | | |
| **LANGUAGE OF INSTRUCTION** | | | | | | |
| ×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** |  | | **Seminar paper (Written examination)** | | | **70** |
| **Practical teaching** |  | | **Discussion (Oral examination)** | | | **30** |
| **Teaching colloquia** |  | | **OVERALL SUM** | | | **100** |
| **\*Final examination mark is formed in accordance with the Institutional documents**  *Realization of the seminar paper as well as regular attending to lectures are mandatory* | | | | | | |