



# 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	<input type="checkbox"/> Bachelor <input type="checkbox"/> Master's <input checked="" type="checkbox"/> Doctoral
Type of course	<input type="checkbox"/> Obligatory <input checked="" type="checkbox"/> Elective
Semester	<input checked="" type="checkbox"/> Autumn <input type="checkbox"/> Spring
Year of study	Second
Number of ECTS allocated	10
Name of lecturer/lecturers	Dr Milos S Stojkovic
Teaching mode	<input checked="" type="checkbox"/> Lectures <input type="checkbox"/> Group tutorials <input type="checkbox"/> Individual tutorials <input type="checkbox"/> Laboratory work <input type="checkbox"/> Project work <input checked="" type="checkbox"/> Seminar <input type="checkbox"/> Distance learning <input type="checkbox"/> Blended learning <input type="checkbox"/> 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),
  - a. Models of formalized (strongly structured) knowledge,
  - b. Models of non-formalized knowledge,
  - c. Hybrid models of knowledge representation,

3. Models of computer aided reasoning (aimed for engineering systems)
  - a. Causal Reasoning,
  - b. Model-Based Reasoning,
  - c. Case-Based Reasoning,
  - d. Analogy Based Reasoning,
  - e. The time context in reasoning process,
  - f. Hybrid models of reasoning,
4. Models and methods for KBES application into the modern PLM systems (CAD/CAE/CAPP/CAM ... systems),
1. 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*