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	Advanced Methods of Geometric Modelling
Level of study	☐Bachelor ☐ Master's × Doctoral
Type of course	☐ Obligatory × Elective
Semester	☐ Autumn ×Spring
Year of study	First
Number of ECTS allocated	10
Name of lecturer/lecturers	Dr Milos S Stojkovic, Dr Nikola Korunovic
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 and skills about advanced methods of geometric modelling in order to introduce him with the challenges in the field of contemporary and induce him for future research and development.

Course outcome: After the course completing and passing the exam, the student will be able to:

1. *Apply advance methods of geometric modelling designing parts and assemblies of highly-complex geometry,*
2. *Organize dimensional, mathematical and logical relations due to functional optimization and control of the model geometry and topology,*
3. *Synthesize advance methods of geometric modelling owing to get the model customized for further and target engineering analyses (e.g. for CAE and CAM).*

SYLLABUS (brief outline and summary of topics, max. 10 sentences)

1. **Introduction – Advance CAD systems and their application**
2. **Modelling of organic (free) forms (usage of industrial design sketches, photos, T-splines, digital shaping)**
3. **Dimensional schemas**

4. **Functional optimization and control of the model geometry (relations, production rules, modular expert systems)**
5. **Modelling and parameterization of similar topologies**
6. **Semantic features of geometric and topological elements**
7. **Geometric modelling for CAE and CAM**
8. **Actual research challenges in the field**

Study research along with instructions: training Shape and Knowledgeware modules of Catia with examples from real practice (examples of industrial design and function-oriented controlled topologies),
Independent learning: two project works (design of organic forms chosen in consultation with supervisor).

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		**Projects (I, II) (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 two projects as well as regular attending to lectures are mandatory