UNIVERSITY OF NIŠ

Course Unit Descriptor	Faculty	Faculty of Mechanical Engineering

GENERAL INFORMATION			
Study Program	Mechanical Engineering		
Study Module (if applicable)	-		
Course Title	Analysis and simulation of tire dynamics		
Level of Study	☐ Bachelor	☐ Master's	☒ Doctoral
Type of Course	☐ Obligatory	☒ Elective	
Semester	☐ Autumn	☒ Spring	
Year of Study	III		
Number of ECTS Allocated	10		
Name of Lecturer/Lecturers	Miloš S. Stojković		
Teaching Mode	☒ Lectures	☒ Group tutorials	☐ Individual tutorials
	☒ Laboratory work	☒ Project work	☒ Seminar
	☐ Distance learning	☐ Blended learning	☐ Other

Purpose and Overview (max. 5 sentences)

To provide students with the necessary level of knowledge on modern methods in tire stress analysis using FEM and simulation of tire dynamics, in order to prepare them for future research in the field. Knowledge and skills acquired during the course are recommended for the position of leading tire designer or tire testing engineer.

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

1) Nonlinearities in FEM based stress analysis of tires, 2) Rubber modeling for use FEA of tires, 3) Modeling of textile and steel cord for use in FEA of tires, 4) Geometrical tire models suitable for tire FEA, 5) FEM models of tires, 6) Simulation of tire inflation process using axisymmetric FEM model, 7) Tire footprint analysis (stress analysis of statically loaded tire), 8) Breaking and cornering analysis, 9) Steady-state cornering analysis, 10) *Study research* along with instructions of a professor, supervisor and, optionally, assigned consultant from the tire company, 11) Study visit to a tire company

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	**5**	**Written Examination**	**0**
Practical Teaching	**0**	**Oral Examination**	**25**
Teaching Colloquia	**70**	**Overall Sum**	**100**
***Final examination mark is formed in accordance with the Institutional documents**			