UNIVERSITY OF NIŠ

Course Unit Descriptor	Faculty	Faculty of Mechanical Engineering

GENERAL INFORMATION			
Study Program	**Mechanical Engineering**		
Study Module (if applicable)	-		
Course Title	Selected Topics in Theory of Vibration		
Level of Study	☐Bachelor	☐ Master's	☒ Doctoral
Type of Course	☐ Obligatory	☒ Elective	
Semester	☐ Autumn	☒ Spring	
Year of Study	I		
Number of ECTS Allocated	10		
Name of Lecturer/Lecturers	Predrag Kozić, Goran Janevski		
Teaching Mode	☒ Lectures ☐ Laboratory work ☐ Distance learning	☐ Group tutorials ☒ Project work ☐ Blended learning	☒ Individual tutorials ☒ Seminar ☐ Other

Purpose and Overview (max. 5 sentences)

To introduce students to the basics of the theory of vibration. Gaining knowledge of theoretical mechanics. Prepare students for research in their doctoral dissertation. Preparation of students for independent research into the written literature, scientific journals, and web portals within the field of optical system design.

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

Free longitudinal vibration of prismatic bars. The differential equation of longitudinal vibrations. Solution in the form of trigonometric order. Forced longitudinal vibrations of prismatic bars. Vibrations of the bars with the load at the end. Free and forced vibrations. Torsional vibration of circular shafts. Free and forced vibrations. Free transverse vibrations of prismatic bars. Differential equations of transversal vibrations. The influence of the transverse force and rotatory inertia. Free vibrations of a bars with free ends. Free vibrations of bars with different boundary conditions. Free vibrations of a beam supported on more support. Forced vibrations of beams with different supports. The influence of axial force on the transversal vibrations. Vibrations of beams on elastic foundation. Vibrations of bars of variable cross section. Beam vibrations due to bending and twisting. Membrane vibrations. Vibrations rectangular membranes. Vibration of a plate. Vibrations of a rectangular plate. Vibrations of circular plates. A circuit plate fixed along the contour. Other types of boundary conditions. The influence of tensile force in the middle surface of the plate.

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	0	Written Examination	80
Practical Teaching	80	Oral Examination	Max. 20
Teaching Colloquia	40	Overall Sum	100
*Final examination mark is formed in accordance with the Institutional documents			