



# UNIVERSITY OF NIŠ

**Course Unit Descriptor**

**Faculty**

Faculty of Mechanical Engineering

## GENERAL INFORMATION

Study Program	<b>Mechanical Engineering</b>
Study Module (if applicable)	-
Course Title	Theory and stability of composite plates and shells
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 type="checkbox"/> Autumn <input checked="" type="checkbox"/> Spring
Year of Study	II
Number of ECTS Allocated	10
Name of Lecturer/Lecturers	Ratko Pavlovic
Teaching Mode	<input checked="" type="checkbox"/> Lectures <input type="checkbox"/> Group tutorials <input checked="" type="checkbox"/> Individual tutorials <input type="checkbox"/> Laboratory work <input checked="" 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)

Introducing students to vibration and stability of composite plates and shells. Gaining knowledge of vibration and stability of composite plates and shells.

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

### Theory classes:

Vibration of composite plates. Basic differential equation of buckling and vibration. Limitations and assumptions. Boundary conditions. Differential equations of the buckling of composite plates. Differential equations vibration composite plate. Buckling and vibration specially orthotropic, symmetric angle, transverse and antisymmetric simply supported antisymmetric angle-ply laminated plates. Determination of the stability condition plate under the action of constant compressive force in the plane of the board. Determination of the natural frequencies plate Vibration of composite shells Basic dynamic buckling differential equations and vibration. Limitations and assumptions. Boundary conditions. Differential equations of composite shell buckling. Differential equations vibration composite shell. Buckling and vibrations specially orthotropic and transverse antisymmetric simply supported laminated cylindrical shells. Determination of conditions of stability of shells under the influence constant axial and radial forces. Determination of the natural frequencies of laminate cylindrical shells.

### Guided independent research:

Prepare students for research in their doctoral dissertation.

## Language of Instruction

Serbian (complete course)       English (complete course)       Other \_\_\_\_\_ (complete course)

Serbian with English mentoring       Serbian with other mentoring \_\_\_\_\_

**Assessment Methods and Criteria**

<b>Pre exam Duties</b>	<b>Points</b>	<b>Final Exam</b>	<b>Points</b>
<b>Activity During Lectures</b>	<b>0</b>	<b>Written Examination</b>	<b>0</b>
<b>Practical Teaching</b>	<b>40</b>	<b>Oral Examination</b>	<b>Max. 60</b>
<b>Teaching Colloquia</b>	<b>0</b>	<b>Overall Sum</b>	<b>100</b>

\*Final examination mark is formed in accordance with the Institutional documents