

<b>Study program / course:</b> Mechanical Engineering				
<b>Type and level of study:</b> Master academic studies				
<b>Course:</b> Mechanics of Composite Materials				
<b>Lecturer:</b> Dragan I. Milosavljevic				
<b>Status of course:</b> Elective for module M5, III semester				
<b>Number of ECTS:</b> 6				
<b>Precondition:</b> No				
<b>The objective of course</b> Understanding theoretical basics and to apply these concepts to analyze and design fiber-reinforced composites for engineering applications. Research related to development and understanding of nature, possibilities, and properties of composite materials for Engineering applications. Special attention is devoted to fibre reinforced materials and laminates with plastic matrix. Basic scope for subject is research of behavior in the field of mechanical forces and mechanical behavior of fibres, matrix and overall composite.				
<b>The outcome of course</b> Students will, upon passing exams, will be able to understand methods of determination of physical and mechanical properties of these materials, as well as influence of application conditions and test specimen to obtained mechanical properties. These method cover determination of basic mechanical relations of fibre reinforced composites, including stress and strain components, elastic properties, micromechanical lamina properties as function of fibre and matrix, and , . relations between structures, structure defects, and other mentioned properties, relations of composite properties and properties of constituents, as well as relations between lamina and multilayer composites - laminates.				
<b>Syllabus</b> <b>Theoretical study:</b> The aim of theoretical study is to make students capable to develop basic skills for understanding of composite behavior such as structure, definition, constituents, classification, processing and application of composites. Basic relations of mechanics of composite materials reinforced with continuous fibres will be given including stress and strain components, elastic properties, prove theorems and formulas necessary for analysis of structures made of fibre reinforced materials. Lamina and Laminate properties as function of fibre and matrix properties and stress – strain relations and their transformations are examined. <b>Practical classes</b> Practical solutions of chosen examples will be presented by lecturer, and students are asked to solve two given examples by themselves, to present and interpret those personally.				
<b>Recommended reading</b> [1] Stevanovic, M., Fibre reinforced polymer composites, Parthenon, Belgrade, pp1-168, 2002. [2] Tsai S.W, Hahn H.T, Introduction to Composite materials, Technomic Pub., 1980. [3] Powell P.C., Engineering with Fibre - Polymer Laminates, Chapman & Hall, 1994.				
The number of hours of active teaching:				Other classes:
Theory: 3	Practical classes: 1.4	Other forms of teaching: 0.6	Research study: 0	1
<b>Methods of teaching</b> Teaching is conducted through lectures, practical classes and independent work of students. Within lectures students receive basic theoretical knowledge. In practical classes students receive practical knowledge and skill for using mathematical tools from study of FRM. Students create independent tasks which include and integrate knowledge for usage of certain tools.				
<b>Evaluation of knowledge</b>				
<b>Pre-final exam obligations</b>	<b>points</b>	<b>Final exam</b>	<b>points</b>	
Activities during the classes:	<b>10</b>	Final examination	<b>50</b>	
Practical classes/ Home works:				
Colloquiums(s)/ Tests:				
Seminar(s) :	<b>40</b>			