

<b>Study Programme: Civil Engineering</b>			
<b>Course Unit Title: Fundamentals of Finite Element Method</b>			
<b>Course Unit Code: GG36HP</b>			
<b>Name of Lecturer(s): Rašeta Andrija, Radujković Aleksandra</b>			
<b>Type and Level of Studies: bachelor</b>			
<b>Course Status (compulsory/elective): elective</b>			
<b>Semester (winter/ summer): summer</b>			
<b>Language of instruction: english</b>			
<b>Mode of course unit delivery (face-to-face/distance learning): face-to-face</b>			
<b>Number of ECTS Allocated: 3</b>			
<b>Prerequisites: none</b>			
<b>Course Aims:</b> Acquiring knowledge on the theoretical foundations of the finite element method and its application in solving deformable body mechanics problems exposed to static actions within the linear-elastic behavior of materials.			
<b>Learning Outcomes:</b> Ability to perform linear-elastic static analysis of structural systems composed of line elements, using finite element method. The acquired knowledge is used in professional subjects that follow and in engineering practice.			
<b>Syllabus.</b> Recapitulation of the basic equations of linear theory of elasticity and solving methods. Basic variation principles in the deformable body mechanics. Approximate methods for solving problems of continuum mechanics: Galerkin's method of weighted residual and Rayleigh-Ritz method. Finite elements and interpolation functions. Finite element formulations: direct method, weighted residual method and variational formulation. Accuracy and solution convergence by the Finite Element Method. One-dimensional (line) finite elements: rods (axial stress and torsion) and beam finite elements (Euler-Bernoulli and Timoshenko beam theory). Plane and spatial structures composed of line elements. Boundary conditions, governing equations of the finite element systems and solving methods. Overview and application of software tools based on finite element method.			
<b>Required Reading:</b> Relevant literature in English, tbd			
<b>Weekly Contact Hours:2</b>	<b>Lectures: 2</b>	<b>Practical work:</b>	
<b>Teaching Methods:</b> Lectures. Tasks. Consultations. Continuous monitoring of the level of knowledge and exam.			
<b>Knowledge Assessment (maximum of 100 points):</b>			
<b>Pre-exam obligations</b>	points	<b>Final exam</b>	points
Attendance			
Computer exercises			
Tests (4x)			

