Course Unit Descriptor

Study Programme: Civil Engineering			
Course Unit Title: Structural Analysis 1			
Course Unit Code: GG22			
Name of Lecturer(s): Aleksandra Radujković, Andrija Rašeta, Igor Džolev			
Type and Level of Studies: Bachelor Level			
Course Status (compulsory/elective): compulsory			
Semester (winter/summer): Winter			
Language of instruction: English			
Mode of course unit delivery (face-to-face/distance learning): Face-to-face			
Number of ECTS Allocated: 9			
Prerequisites: None			
Course Aims: Obtaining knowledge necessary for the analysis on stress and strain of statically determinate line structures due to constant and moveable loads.			
Learning Outcomes: Enabling students to calculate and analyse all types of statically determinate line girders applied in construction. Acquired knowledge can be used in professional courses and in professional practice.			
Syllabus: Technical theory on rod bending in a plane. Geometry on rod deformation and force geometry. Basic unknowns and basic equations, static and mathematical classification of girders. Theorems on girder energy. Principles of virtual motion, principle of virtual forces and their application. Influential functions, influential lines and their application. Statically determinate girders: determining the support reaction and forces in cross sections of solid and trussed girders; knot method, decomposition method, element replacement method, application of virtual motion principle. Construction of influential lines: static method, kinematical method, element replacement method. Deformation of statically determinate girders. Determining particle movement and cross section torsion; geometric solution, application of virtual forces principle. Statically kinematical analogy, determining movement diagrams for solid and trussed girders. Theorems on mutual actions. Construction of influential lines for deformation sizes.			
Required Reading: Relevant literature in English TBD			
Weekly Contact Hours: 6	**Lectures:** 4	**Practical work:** 0	
Teaching Methods: Lectures, numerical – graphic practice, consultations. Practice are held in groups, and processed tasks fully follow the lecture content. Condition for taking the exam is positively evaluated individual tasks, as well as required success at the partial examination or the defended project.			
Knowledge Assessment (maximum of 100 points):			

Pre-exam obligations	points	**Final exam**	points
Project	30	Coloquium exam 1	20 (not obligatory)
		Coloquium exam 2	20 (not obligatory)
		Practical part of the exam - tasks	30
		Oral part of the exam	40

The methods of knowledge assessment may differ; the table presents only some of the options: written exam, oral exam,

project presentation, seminars, etc.