Course Unit Descriptor

Study Programme: Civil Engineering

Course Unit Title: Theory of Structures - hydraulics

Course Unit Code: GG26H

Name of Lecturer(s): Rašeta Andrija, Radujković Aleksandra

Type and Level of Studies: bachelor

Course Status (compulsory/elective): elective

Semester (winter/ summer): summer

Language of instruction: english

Mode of course unit delivery (face-to-face/distance learning): face-to-face

Number of ECTS Allocated: 6

Prerequisites: none

Course Aims:.

Acquiring knowledge necessary for the analysis of static indeterminate structures due to static and dynamic loads.

Learning Outcomes:
Ability for static and dynamic analysis of beam structures used in construction. The acquired knowledge is used in professional subjects that follow and in engineering practice.

Syllabus.
An overview of the basic equations of the linear beam theory. Statically indeterminate structural systems. Force method: basic determinate structure, forming and solving governing equations. Calculation of forces and displacements at cross sections. Special static indeterminate systems: beams fixed at one and both ends, continuous beams, two hinged frame, fixed frame, truss systems. Introduction to seismic analysis of structures. Basics of the structural dynamics. Linear systems with one (single) and more (multi) degrees of freedom of movement. Free and forced undamped and damped vibrations. Basic terms of earthquakes. Seismic action: record of the ground acceleration and the response spectrum. Determination of the responses of linear discrete systems: modal response spectrum analysis and direct integration. Application of structural analysis software.

Required Reading:
Relevant literature in English, tbd

Weekly Contact Hours:2	**Lectures: 3**	**Practical work: 2**

Teaching Methods:
Lectures, numerical-graphic exercises, consultations. Exercises are carried out by groups according to a program that fully follows the material from the lectures. The condition for entering the exam is positively assessed individual tasks.

Knowledge Assessment (maximum of 100 points):

Pre-exam obligations	points	**Final exam**	points
Attendance			
Computer exercises			
Tests (4x)			