Faculty of Civil Engineering / Master study (II semester) / **Seismic design**

Prerequisites:	No prerequisites.
Course aims:	Acquisition of basic knowledge in the field of seismic design
Name and surname of teacher and assistant	dr Srđan Janković i dr Jelena Pejović
Method of teaching and mastering the material	Lectures. Independent working on tasks. Colloquia. Final exam. Consultations.
I week, lecture	1. Earthquake engineering and the role of seismic design. Basic principles of seismic design. Historical development. Project goals.
I week, exercise	1. Earthquake engineering and the role of seismic design. Basic principles of seismic design. Historical development. Project goals.
II week, lecture	2. Preliminary design of seismic resistant objects: Configuration selection. Horizontal configuration: base shape, mass and stiffness distribution in the base, seismic joints.
II week, exercise	2. Preliminary design of seismic resistant objects: Configuration selection. Horizontal configuration: base shape, mass and stiffness distribution in the base, seismic joints.
III week, lecture	Vertical configuration: slender ratio, height allowed, setbacks, flexible stories, short columns
III week, exercise	Vertical configuration: slender ratio, height allowed, setbacks, flexible stories, short columns
IV week, lecture	Selection of materials and construction system. Frame systems.
IV week, exercise	Selection of materials and construction system. Frame systems.
V week, lecture	Wall systems. Brace systems.
V week, exercise	Wall systems. Brace systems.
VI week, lecture	3. Seismic design of non-structural components: Influence of non-structural components. Cause of non-constructive damage. Masonry infill panels design.
VI week, exercise	3. Seismic design of non-structural components: Influence of non-structural components. Cause of non-constructive damage. Masonry infill panels design.
VII week, lecture	Colloquium
VII week, exercise	Colloquium
VIII week, lecture	4. Seismic response analysis of structures; Systems with one degree of freedom. Equation of motion - earthquake excitation.
VIII week, exercise	4. Seismic response analysis of structures; Systems with one degree of freedom. Equation of motion - earthquake excitation.
IX week, lecture	System response to an earthquake. The concept of the response spectrum.
IX week, exercise	System response to an earthquake. The concept of the response spectrum.
X week, lecture	Responses of elastic systems with more degrees of freedom. Modal analysis.
X week, exercise	Responses of elastic systems with more degrees of freedom. Modal analysis.
XI week, lecture	Responses of inelastic systems. Inelastic response spectra.
XI week, exercise	Responses of inelastic systems. Inelastic response spectra.
XII week, lecture	Defining earthquake load. Basic methods of seismic analysis - linear static and linear dynamic analysis.
XII week, exercise	Defining earthquake load. Basic methods of seismic analysis - linear static and linear dynamic analysis.
XIII week, lecture	Basic methods of seismic analysis - nonlinear static, nonlinear dynamic and capacity design.
XIII week, exercise	Basic methods of seismic analysis - nonlinear static, nonlinear dynamic and capacity design.
XIV week, lecture	New trends in earthquake engineering.
XIV week, exercise	New trends in earthquake engineering.
XV week, lecture	Final exam
XV week, exercise	Final exam
Student responsibilities during classes	Attendance at lectures and exercises, making independent papers, taking colloquia.