

Faculty of Civil Engineering / Basic study (IV semester) / **Fundamentals of Earthquake Engineering**

Prerequisites:	No prerequisites.
Course aims:	The aim of this course is to introduce students to the basics of engineering seismology, earthquake engineering and seismic risk management.
Name and surname of teacher and assistant	dr Srđan Janković i mr Maja Laušević
Method of teaching and mastering the material	Lectures. Independent working on tasks. Colloquia. Final exam. Consultations.
I week, lecture	1. Earthquakes and seismic hazard determination. Vulnerability to earthquakes and general aspects of reducing of seismic risk.
I week, exercise	1. Earthquakes and seismic hazard determination. Vulnerability to earthquakes and general aspects of reducing of seismic risk.
II week, lecture	Measurement of vibrations. Seismic waves. Determining the location of the earthquake. The strength and intensity of earthquakes. Energy of an earthquake.
II week, exercise	Measurement of vibrations. . Seismic waves. Determining the location of the earthquake. The strength and intensity of earthquakes. Energy of an earthquake.
III week, lecture	Ground motion parameters as a measure of earthquake's intensity.
III week, exercise	Ground motion parameters as a measure of earthquake's intensity.
IV week, lecture	Estimation of ground motion parameters. Determination of seismic hazard.
IV week, exercise	Estimation of ground motion parameters. Determination of seismic hazard.
V week, lecture	Deterministic and probabilistic seismic hazard analysis. Effects of an earthquake (ground shaking, liquefaction, landslides, faults zones, tsunami)
V week, exercise	Deterministic and probabilistic seismic hazard analysis. Effects of an earthquake (ground shaking, liquefaction, landslides, faults zones, tsunami)
VI week, lecture	2. Seismic risk management: Seismic risk determination. Definitions of terms. Vulnerability assessment. Acceptable seismic risk
VI week, exercise	2. Seismic risk management: Seismic risk determination. Definitions of terms. Vulnerability assessment. Acceptable seismic risk
VII week, lecture	Seismic risk mitigation. Earthquake preparedness.
VII week, exercise	Seismic risk mitigation. Earthquake preparedness.
VIII week, lecture	Colloquium I
VIII week, exercise	Colloquium I
IX week, lecture	3. Earthquake Engineering - the role of seismic design. Basic design characteristics strength, rigidness and ductility.
IX week, exercise	3. Earthquake Engineering - the role of seismic design. Basic design characteristics strength, rigidness and ductility.
X week, lecture	The behavior of objects under seismic action. Natural period and damping.
X week, exercise	The behavior of objects under seismic action. Natural period and damping.
XI week, lecture	Seismic behavior in the plan. The role of the diaphragm.
XI week, exercise	Seismic behavior in the plan. The role of the diaphragm.
XII week, lecture	Definition of earthquake load - Response spectra.
XII week, exercise	Definition of earthquake load - Response spectra.
XIII week, lecture	Determining the response spectrum. Application of response spectrum.
XIII week, exercise	Determining the response spectrum. Application of response spectrum.
XIV week, lecture	Colloquium II
XIV week, exercise	Colloquium II
XV week, lecture	Final exam
XV week, exercise	Final exam
Student responsibilities during classes	Attendance at lectures and exercises, making independent papers, taking colloquia.