

Course unit title:	Seismology and Geophysics		
Course unit code:	PEG300		
Type of course unit:	Compulsory		
Level of course unit:	Bachelor (1st cycle)		
Year of study:	4		
Semester when the unit is delivered:	8		
Number of ECTS credits allocated :	6		
Name of lecturer(s):	Dr. Conostas Papazachos		
Learning outcomes of the course unit:	<ol style="list-style-type: none"> 1. Understand basic geodynamics and their role, both regarding the earthquake generation process, as well as for its control on the shallow and deep structure of the lithosphere-asthenosphere system. 2. Obtain a clear and comprehensive idea regarding the earthquake generation process, the main source characteristics and their role for elastic wave propagation, as well as the main properties of seismic waves 3. Examine in a theoretical and practical manner, through appropriate calculations and software, the fundamental issues that affect seismic hazard assessment and its uncertainties 4. Assess the suitability and applicability of seismic and non-seismic geophysical methods for geophysical-geotechnical soil characterization in applied problems 		
Mode of delivery:	Face-to-face		
Prerequisites:	PEG200	Co-requisites:	None
Recommended optional program components:	None		
Course contents:	<ul style="list-style-type: none"> • Basic geodynamics (Plate tectonics, Earth's structure, Earthquake generation) • Earthquakes as point and finite source (Earthquake generation and location, Earthquake source and focal mechanisms, Earthquake magnitude scales, fault ruptures and models, Earthquake spectrum) • Origin of seismic waves (Fundamentals of wave propagation, Seismic wave attenuation, Basic measures of seismic motions) • Introduction to seismic hazard assessment (Basic principles, Role of uncertainties) • Ground-motion prediction relations and its use for seismic hazard assessment (GMPE forms and their use, basic deterministic and probabilistic seismic hazard assessment) 		
Recommended and/or required reading:			
Textbooks:	S. Stein S. and M. Wyssession, <i>An Introduction to Seismology, Earthquakes, and</i>		

	<p>Earth Structure, First Edition, Blackwell Publishing, ISBN: 9780865420786.</p> <p>P.V. Sharma, Environmental and engineering geophysics, Cambridge University Press, ISBN: 9780521576321.</p>
Additional References:	W. Lowrie, Fundamentals of Geophysics , Second Edition, Cambridge University Press, ISBN: 9780521675963.
Planned learning activities and teaching methods:	The course will be presented through formal lectures and tutorial sessions in class, as well as laboratory classes with hands-on experience by the students. The lectures will present to the student the course content and allow time for questions and discussion. Study cases will be examined and indicative examples will be also solved in class. The material will be presented using visual aids such as Powerpoint slides, which will be provided to the students, in addition to the notes taken by them. The course material, including laboratory work, will be made available through the class website and also through the university's own e-learning platform. Custom publicly available or open-source software will be used for the data analysis and processing, which will be used both in the school infrastructure, as well as on the students' personal computers, to be used for additional homework.
Assessment methods and criteria:	<ul style="list-style-type: none"> • Coursework 40% • Final Exam 60%
Language of instruction:	English
Work placement(s):	No