

GEW-MF12 Seismological Data Science		Number of credit points (LP): 12		
Module type (mandatory or elective module)	Elective module			
Contents and qualification objectives of the module	<p>Contents Acquisition of data e.g. with seismometers and rotation sensors, seismological data formats, data conversion, typical steps in data evaluation (e.g. read in, transform), data processing and visualization. The course includes an introduction to Python programming. Examples of data processing include topics such as filters, convolution, Fourier transform, the localization of volcanic seismological signals, event types, automatic trigger systems, hazard properties of seismic sources, the propagation medium, and site effects, the hazard integral, and development of seismic scenarios for large cities.</p> <p>Qualification goals Students</p> <ul style="list-style-type: none"> - learn the Python programming language - apply the Obspy and Pyrocko seismological packages to various seismological issues. - deepen their process-oriented understanding of data collected in the Earth system - are able to transfer observations from the field and information from databases into models - can apply digital signal processing, for example, on the basis of seismological recordings of volcanoes or in the context of probabilistic earthquake hazard analysis and the seismic risk chain - understand current research approaches and the state of the art in the field of seismology. - handle and visualize uncertainties (aleatory and epistemic) 			
Module examination (number, form, scope)	An examination of the following forms: Portfolio examination, consisting of: Report (15-20 pages) and corresponding presentation (20-30 minutes). Oral exam, 30-45 minutes Written exam, 90-120 minutes			
Self-learning time (in time hours)	240			
Events (teaching forms)	Contact time (in semester hours)	Secondary examination (number, form, scope)		Partial module examination accompanying the course (number, form, scope)
		For the completion of the module	For admission to the module examination	
Lecture and exercise I (lecture and exercise)	2V+2T	-	-	-
Lecture and exercise II (lecture and exercise)	2V+2T	-	-	-
Frequency		Winter semester (V+T I) and summer semester (V+T II)		
Prerequisite for participation in the module		None		
Teaching unit(s)		Geosciences		