

**Introduction to Seismology**  
- **COURSE SYLLABUS**



1.	<b>Course title:</b> <i>Introduction to Seismology</i>
2.	<b>Lecturer:</b> <i>Dr hab. Grzegorz Lizurek, prof. PAN</i>
3.	<b>Field, type and level of studies, year of study:</b> <i>eg., seismology, geophysics</i>
4.	<b>Course character:</b> <i>eg. monographic lecture,</i>
5.	<b>Teaching method:</b> <i>traditional or on-line</i>
6.	<b>Language:</b> <i>English, Polish, depending on the audience</i>
7.	<b>Course type and number of hours:</b> <i>Lecture, 6h</i>
8.	<b>Estimated load of student's independent work:</b> <i>eg., 6h</i>
9.	<b>Total workload and number of ECTS points:</b> <i>eg., 12 h, 3 ECTS</i>
10.	<b>Short description and main focus of the course:</b> Earthquakes are one of the most dangerous natural phenomena leading to catastrophic damage. Earthquakes mainly occur in the vicinity of tectonic plate boundaries, however, they may be also induced or triggered by human activities. During this lecture processes leading to earthquakes, their surface effects, as well as the methods of location and magnitude estimation, will be introduced. Additionally, students will learn the basics of earthquake hazard assessment. Anthropogenic seismicity will be also introduced. This part will be dealing with the influence of human activities such as mining, oil and gas extraction, and energy production on seismic events occurrence. Anthropogenic seismic hazard will also be discussed. Some of the methods will be in a form of exercises prepared on data and applications available in EPISODES platform.
11.	<b>References:</b> 1. Bormann, P. (Ed.), 2012. <i>New Manual of Seismological Observatory Practice (NMSOP-2)</i> , IASPEI, GFZ German Research Centre for Geosciences, Potsdam;

	<p><a href="http://nmsop.gfz-potsdam.de">http://nmsop.gfz-potsdam.de</a>; DOI: 10.2312/GFZ.NMSOP-2</p> <p>2. Gibowicz S.J., Kijko A. 1994 <i>An Introduction to Mining Seismology</i>, Academic Press, San Diego</p> <p>3. Shearer P. 2009 <i>Introduction to Seismology</i>, Cambridge University Press, ISBN: 9780521708425</p> <p>4. Stein, S. &amp; Wysession, M. 2003. <i>An Introduction to Seismology, Earthquakes, and Earth Structure</i>, Oxford: Blackwell Science. ISBN:0865420785</p>	
12.	<p><b>Prerequisites:</b></p> <p><i>Basic knowledge of Matlab or octave may be required</i></p>	
13.	<p><b>Educational outcomes:</b></p> <p><b>Knowledge:</b> Student knows and understands:</p> <ul style="list-style-type: none"> <li>- Origin of the earthquakes</li> <li>- Tectonic processes leading to earthquakes</li> <li>- Limitations of the methods used in seismology</li> <li>- Basic terms of probabilistic seismic hazard</li> </ul> <hr/> <p><b>Practical Skills:</b> Student is able to:</p> <ul style="list-style-type: none"> <li>- Perform of earthquake location and magnitude estimation with dedicated software</li> <li>- Properly read and interpret the seismic catalog</li> <li>- Estimate seismic hazard parameters with use of dedicated software</li> </ul> <hr/> <p><b>Social Skills:</b> Student is ready to:</p> <ul style="list-style-type: none"> <li>- critically evaluate the achievements in the field of seismology;</li> <li>- critically evaluate one's contributions to the development of that field;</li> <li>- recognize the value of knowledge in solving cognitive and practical problems of seismology</li> </ul>	<p><b>PQF level 8 codes:</b></p> <p>P8S_WG</p> <hr/> <p>P8U_U</p> <hr/> <p>P8S_KK</p>
14.	<p><b>Evaluation of the educational outcomes:</b></p> <p><i>homework assignments,</i></p>	
15.	<p><b>Criteria to complete the course:</b></p> <p><i>at least 70% attendance, final grade depends on the evaluation of the report</i></p>	
16.	<p><b>Contact with the lecturer:</b></p> <p><a href="mailto:lizurek@igf.edu.pl">lizurek@igf.edu.pl</a>, Institute of Geophysics, Ks. Janusza 64, room 309, Warszawa, Mondays 10.00-12.00</p>	