Modern view on earthquakes and seismicity
- COURSE SYLLABUS

1.	**Course title:** *Modern view on earthquakes and seismicity*	
2.	**Lecturer:** *dr hab. Piotr Senatorski*	
3.	**Field, type and level of studies, year of study:** *geophysics, all years of study*	
4.	**Course character:** *monographic lecture*	
5.	**Teaching method:** *Traditional or on-line*	
6.	**Language:**	*depending on the audience*
7.	**Course type and number of hours:** *lecture, 10h*	
8.	**Estimated load of student's independent work:**	*8h*
9.	**Total workload and number of ECTS points:**	*18 h, 1 ECTS*
10.	**Short description and main focus of the course:** *The lecture will be an introduction to the modern view on earthquakes: their physics, statistics, models and forecasting. During five two hour lectures, the basic concepts will be presented by using pictures rather than advanced mathematics, though mathematical expressions will also occur.* *Summary of course content:* *(1) Earthquake physics, with its history and the key concepts: from the Reid's to the Asperity Model.* *(2) Subduction zone seismicity: Finite fault models, Asperities, Slow and fast slips, Seismic moment budget, Tectonic plate coupling.* *(3) Earthquake source models: Slip instability, Driving and frictional stress, Earthquake size measures and their scaling relations.* *(4) Earthquake statistics and seismicity patterns: the Gutenberg-Richter and Omori laws, foreshocks and aftershocks, Earthquake distribution in time and space.* *(5) Seismic forecasts: Mean recurrence time of the largest earthquakes and their precursory seismicity patterns.*	

11.	**References:**	
	Selected journal papers will be recommended.	
12.	**Prerequisites:**	
	Basic knowledge of geophysics and mathematics.	
13.	**Educational outcomes:**	**PQF level 8 codes:**
	Knowledge: *A general view on earthquakes and seismicity will be acquired; selected topics that will be presented in more detail.*	*P8U_W*
	Practical Skills: *Students will be able to identify the key problems and to apply some methods of the physics of earthquakes.*	*P8U_U*
	Social Skills: *They will be able to discuss the results published by other researchers and to define areas of their own studies to contribute to existing scientific achievements.*	*P8U_K*
14.	**Evaluation of the educational outcomes:**	
	Essay on a selected topic	
15.	**Criteria to complete the course:**	
	At least 80% attendance, final grade depends on the evaluation of the essay	
16.	**Contact with the lecturer:**	
	Email: psenat@igf.edu.pl	