



## COURSE CARD

### 1. Basic information

Course name in English:	Geodynamics - Selected Issues	
Course name in Polish:	Geodynamika - wybrane zagadnienia	
Number of hours:	15	
Type of course:	Elective course	
Form of course:	lecture	
Code of course:		
Course leader:	Jurand Wojewoda, DSc, PhD, Prof@WUST	
Faculty of the course leader:	W6 Faculty of Geoengineering, Mining and Geology	
Email address of the course leader:	<a href="mailto:jurand.wojewoda@pwr.edu.pl">jurand.wojewoda@pwr.edu.pl</a>	
Scientific discipline(s) assigned to the course (doctoral students representing the marked disciplines can participate in the course):	Architecture and urban planning	<input type="checkbox"/>
	Automation, electronic, electrical engineering and space technologies	<input type="checkbox"/>
	Information and communication technology	<input type="checkbox"/>
	Biomedical engineering	<input type="checkbox"/>
	Chemical engineering	<input type="checkbox"/>
	Civil engineering, geodesy and transport	<input checked="" type="checkbox"/>
	Materials engineering	<input type="checkbox"/>
	Mechanical engineering	<input type="checkbox"/>
	Environmental engineering, mining, and energy	<input checked="" type="checkbox"/>
	Mathematics	<input type="checkbox"/>
	Chemical sciences	<input type="checkbox"/>
	Physical sciences	<input checked="" type="checkbox"/>
Management and quality studies	<input type="checkbox"/>	

### 2. Objectives

The lectures are aimed at familiarizing students with selected methods for assessing geokinematics and geodynamic activity of the lithosphere, in particular the area of Lower Silesia.

### 3. Content

*Detailed information about the course content, including topics and form of classes.*

No.	Topic	Number of hours	Form of classes
1	<b>Introduction</b> - - what are <b>geostatics</b> , <b>geokinematics</b> and <b>geodynamics</b> (research subjects, research goals, conclusions and applications; methodological categorization - the physical, stochastic, phenomenological)	3	lecture



2	<b>Indicators of geokinematics and geodynamics</b> (geodetic, geological, archaeological and geomorphological)	4	lecture
3	<b>The global monitoring system of geodynamics</b>	4	lecture
4	<b>World geodynamic laboratories</b> - overview and research specialization. Tasks of the Geodynamic Laboratory of the Space Research Center of the Polish Academy of Sciences in the Książ Castle - instruments, measurement results and regional, as well as supra-regional applications	4	lecture

#### 4. Prerequisites

List of prerequisites relating to knowledge, skills and other competences for course participants.

Basic knowledge in the field of geology, geography and physics/geophysics

#### 5. Learning outcomes

List of learning outcomes at level 8 of the Polish Qualifications Framework assigned to the course (mark the learning outcomes in the last column).

Symbol	Learning outcome	
	<b>KNOWLEDGE.</b> Doctoral student knows and understands:	
SzD_W3	the main trends in the development of the scientific or artistic disciplines covered in the curricula;	<input checked="" type="checkbox"/>
SzD_W4	research methodology;	<input checked="" type="checkbox"/>
SzD_W5	the rules for the dissemination of scientific results, including in open access mode;	<input checked="" type="checkbox"/>
SzD_W6	the fundamental dilemmas of modern civilization;	<input checked="" type="checkbox"/>
SzD_W7	the legal and ethical conditions of scientific activity;	<input checked="" type="checkbox"/>
SzD_W8	the economic and other relevant conditions of scientific activity;	<input checked="" type="checkbox"/>
SzD_W9	basic principles of knowledge transfer to the economic and social spheres and commercialisation of results of scientific activity and know-how related to these results.	<input checked="" type="checkbox"/>
	<b>SKILLS.</b> Doctoral student is able to:	
SzD_U2	use knowledge from different fields of science or art to creatively identify, formulate and innovatively solve complex problems or perform research tasks, in particular: - define the purpose and subject of scientific research, formulate a research hypothesis, - develop research methods, techniques and tools, and use them creatively, - draw conclusions on the basis of scientific research; critically analyse and evaluate the results of scientific research, expertise and other creative work and their contribution to knowledge development; transfer the results of scientific activities to the economic and social spheres;	<input checked="" type="checkbox"/>



SzD_U3	communicate on specialised topics to the extent that they enable an active participation in the international scientific community;	<input checked="" type="checkbox"/>
SzD_U4	disseminate research results, including in popular forms;	<input checked="" type="checkbox"/>
SzD_U5	initiate debates and participate in a scientific discourse;	<input type="checkbox"/>
SzD_U6	be able to speak a foreign language at B2 level of the Common European Framework of Reference for Languages to a level that enables them to participate in the international scientific and professional environment;	<input checked="" type="checkbox"/>
SzD_U7	plan and implement an individual or collective research or creative activity, including in an international environment;	<input type="checkbox"/>
SzD_U8	independently plan and act for one's own development and inspire and organize the development of others;	<input type="checkbox"/>
SzD_U9	plan classes or groups of classes and implement them using modern methods and tools.	<input checked="" type="checkbox"/>
<i>SOCIAL COMPETENCES. Doctoral student is ready to:</i>		
SzD_K3	fulfilling the social obligations of researchers and creators, initiate public interest activities, thinking and acting in an entrepreneurial way;	<input checked="" type="checkbox"/>
SzD_K4	maintaining and developing the ethos of research and creative environments, including: - carrying out scientific activities in an independent manner, - respecting the principle of public ownership of research results, taking into account the principles of intellectual property protection.	<input type="checkbox"/>

## 6. Evaluation

*Short description of the method(s) used to evaluate the learning outcomes assigned to the course, e.g., exam, test, report, presentation, etc.*

Active participation in lectures and preparation of a short, summarizing report on classes

## 7. Teaching methods

*Short description of the teaching methods used during the course, e.g., multimedia presentation, discussion, literature studies, developing written documents, own work, etc.*

The lecturer presents richly illustrated topics and animations. Possible visit (personal or virtual) in the PAN Geodynamic Laboratory in Książ Castle

## 8. Literature

*List of primary and secondary literature used to prepare the course and including additional knowledge for participants, e.g., books, textbooks, research papers, standards, web pages, etc.*

Artiuszkow, E.W., 1979. Geodynamika. Wydawnictwo Nauka, Moskwa, 327 pp.

Dadlez, R., Jaroszewski, W., 1994. Tektonika. PWN, 743 pp.

Kaczorowski, M., Wojewoda, J., 2011. Neotectonic activity interpreted from a long water-tube tiltmeter record at the SRC geodynamic laboratory in Książ, Central Sudetes, SW Poland. Acta Geodynamica et Geomaterialia, 8, 3: 1- 13.

Pilqer, R., 2003. Geokinematics. Springer Verlag, 280 pp.



Schumm, S.A., Dumont, J.F. & Holbrook, J.M., 2006. Active Tectonics and Alluvial Rivers. Cambridge University Press, 290 pp. ISBN: 0521890586

Turcotte, D.L., Schubert, G., 1982. Geodynamics – Applications of Continuum Physics to Geological Problems. John Wiley & Sons, New York, 450 pp.

## 9. Other remarks

*Additional remarks, comments, (e.g., language of the course)*

English