

CODE: ECO 4.5	COURSE TITLE: LANDSCAPE-ECOLOGICAL IMPACTS OF CLIMATE CHANGE			ECTS: 3
COORDINATOR: Prof. dr hab. Janusz Olejnik		DEPARTMENT: Institute of Construction and Geoengineering		
COURSE CATEGORY				
Open				
VOLUME:30 H			PERSONAL WORK: 15 H	
LECTURES: 15 H	PRACTICALS (CLASSES) (15 H)	PLACEMENT: (H)	PROJECT:	OTHER MODALITIES: (H)
EVALUATION:		OTHER MODALITIES:		LECTURER(S)
EVALUATION MODALITIES				Prof. dr hab. Janusz Olejnik (leading teacher)  Dr inż. Klaudia Ziemblińska
ORAL INDIVIDUAL REPORT				
WRITTEN INDIVIDUAL REPORT				
FINAL ORAL EXAM				
FINAL WRITTEN EXAM	X			
COMMENTS OF EVALUATION:		TEACHING METHODS: Lectures, classes		
SEMESTER: SUMMER/WINTER		LANGUAGE: ENGLISH		
PERIOD: 15 WEEKS		YEAR OF STUDY: OPEN		
OBJECTIVES				
The main objective of the course is to make students aware of the complexity of climate-landscape interactions, their ecological consequences, processes behind carbon and water cycles, causes and results of intensified climate change on natural ecosystems as well as societies and economy, with a special focus on water resources, seriously threatened by the temperature rise.				
CONTENTS				

1. Fluxes of mass and energy exchanged between the atmosphere and the earth's surface- what is “flux”, how does the turbulence work? How can we measure trace gases’ fluxes?
2. Anthropogenic sources of changes in the composition of the atmosphere.
3. Greenhouse effect and the change in its intensity in the last century.
4. Basics of climatology including types of climates on Earth.
5. Changes in energy and water balance of various ecosystems due to global warming.
6. Examples of positive and negative feedbacks and their contribution to changes occurring in various ecosystems.
7. Impact of changes in water balance on land ecosystems.
8. Anticipated climatic conditions in the perspective of several decades.
9. Projected changes in the evolution of terrestrial ecosystems due to expected “new” climatic conditions.
10. Role of selected ecosystems in climate changes mitigation.
11. Challenges for hydrotechnical constructions in the face of water balance disruptions
12. Economic consequences resulting from global warming on various ecosystems and the economy on a local and global scale.

GROUP SIZE: 15

PRE-REQUIRES: Basics of physics