

<b>Course number</b>		U-LAS15 10008 LE58					
<b>Course title (and course title in English)</b>	How the Earth Works I-E2 :Environmental Change			<b>Instructor's name, job title, and department of affiliation</b>	Graduate School of Science Associate Professor,ENESCU, Bogdan Dumitru		
	How the Earth Works I-E2 :Environmental Change						
<b>Group</b>	Natural Sciences			<b>Field(Classification)</b>	Earth Science(Foundations)		
<b>Language of instruction</b>	English			<b>Old group</b>	Group B		<b>Number of credits</b> 2
<b>Number of weekly time blocks</b>	1	<b>Class style</b>	Lecture (Face-to-face course)		<b>Year/semesters</b>	2024 • First semester	
<b>Days and periods</b>	Thu.4		<b>Target year</b>	All students		<b>Eligible students</b>	For all majors
<b>[Overview and purpose of the course]</b>							
I will outline the environmental changes that have occurred during the Earth history, with a special focus on climate change. The lectures will address the main factors that control the climate, as well as their interaction. We will discuss in particular the human impact on environment and its consequences. To facilitate understanding and encourage active participation during the class, some materials and vocabulary in Japanese will be also provided.							
<b>[Course objectives]</b>							
The Earth Climate is the result of complex interactions among the components that make up the Earth: the Atmosphere (layer of gases), the Hydrosphere (water), the Lithosphere (or solid Geosphere), and the Biosphere (all living organisms). By learning about these interactions that take place on a variety of time scales, the students will be able to understand why and how the Earth Climate continuously changes.							
<b>[Course schedule and contents)]</b>							
<p>During its history of 46 billion years, the Earth climate changed profoundly. At the scale of hundreds of millions of years, the Earth is now during an "Ice Age" period. However, at a 'closer' look, at the scale of hundreds of thousands of years, we are at present in a period of relative warming known as "interglacial period". From the early part of the 19th century, the human activity started having a pronounced impact on climate, being likely responsible for the current "global warming", due to high emission of greenhouse gases.</p> <p>Contents (tentative):</p> <ul style="list-style-type: none"> <li>- Components of the climate system;</li> <li>- Current global environment: the Earth's energy balance;</li> <li>- Origins and evolution of the Atmosphere, Hydrosphere and Continents;</li> <li>- Climate change factors: the carbon cycle;</li> <li>- Long-term and short-term climate changes from past to present;</li> <li>- 20th century warming: fingerprints of human-related global climate change.</li> </ul> <p>There will be 2-3 lectures for each of the topics above.</p>							
<div style="text-align: right;">Continue to How the Earth Works I-E2 :Environmental Change(2)</div>							

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**[Course requirements]**

None

**[Evaluation methods and policy]**

Evaluation will be based on class attendance and active participation (30%), class-room exercises (30%) and a final examination (40%).

**[Textbooks]**

A pack of class materials (mainly PowerPoint files) will be provided to students. The following textbook is recommended, but not required:

Lee R. Kump, James F. Kasting and Robert G. Crane, The Earth System (3rd edition), Prentice Hall, ISBN: 978-0321597793, 2009.

**[References, etc.]**

( **References, etc.** )

John P. Grotzinger and Thomas H. Jordan 『Understanding Earth (7th edition)』 ( W.H. Freeman and Company ) ISBN:978-1-4641-3874-4

**[Study outside of class (preparation and review)]**

Students will be expected to do readings in preparation for the class. Class-related materials should be downloaded and printed out by students, from a dedicated website, which will be announced at the beginning of the lecture.

**[Other information (office hours, etc.)]**

Students can meet me during office hours with prior appointment. The number of students who can take this class will be limited to a maximum of 60 students.