

科目ナンバリング		U-LAS61 10020 LE14							
授業科目名 <英訳>	Environmental Monitoring for Humanosphere-E2 :Introduction to Humanosphere				担当者所属 職名・氏名	生存圏研究所 教授 Luce , Hubert			
	Environmental Monitoring for Humanosphere-E2 :Introduction to Humanosphere								
群	統合科学科目群			分野(分類)	環境			使用言語	英語
旧群		単位数	2単位	週コマ数	1コマ	授業形態	講義 (対面授業科目)		
開講年度・ 開講期	2024・後期		曜時限	金4		配当学年	主として1・2回生	対象学生	全学向
[授業の概要・目的]									
<p>The development of human societies is leading to increasing degradation of the environment and all ecosystems. In addition, the population growth has increased human vulnerability to natural disasters, which are themselves on the increase due to climate change caused by human activity. In-depth knowledge and understanding of environmental conditions is necessary to preserve the environment for future generations and to protect human life, as recommended by the United Nations Sustainable Development Goal SDG13 (Climate Action). Environmental monitoring, i.e. the observation and study of the environment, is therefore crucial for remedying environmental problems, for sustainable development, for risk assessment and for warning populations in the event of natural disasters. This lecture outlines the general aspects of environmental monitoring.</p>									
[到達目標]									
<p>The students will gain knowledge about the concept of environmental monitoring. They will acquire fundamental notions for the implementation of an environmental monitoring project. Through a few examples, students will understand the importance of environmental monitoring to diagnose problems and alerts, and to help remedy them. They will also learn the basics of in situ and remote sensing measurements, the cornerstone of environmental monitoring, and the main international bodies dedicated to environmental monitoring. Environmental data will also be analyzed to illustrate the usefulness of this discipline.</p>									
[授業計画と内容]									
<p>1. (Weeks 1-2) Introduction to environmental monitoring: its purpose and growing necessity.</p> <p>2. (Week 3) Monitoring: the first step in the staircase of knowing. -Generation of information for warning, for getting knowledge, for understanding and for solving issues.</p> <p>3. (Weeks 4-6) Practical aspects of monitoring. -Sampling strategies, data acquisition and processing: basic rules to obtain reliable information.</p> <p>4. (Week 7) Agencies / organizations providing monitoring data. -Examples of international and national agencies and databases</p> <p>5. (Weeks 8-9)</p>									
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Remote sensing for environmental monitoring.

-Basic principles of active and passive remote sensing techniques and their applications.

6. (Week 10)

Examples of major environmental issues and their monitoring.

-Acid rain, threats to biodiversity, water and soil degradations, monitoring agencies and databases.

7. (Weeks 11-12)

Illustrations of the usefulness of environmental monitoring: the stratospheric ozone depletion and the understanding of the current climate change.

- Stratospheric ozone depletion: description of the environmental issue and the role of environmental monitoring in discovering and solving the problem.

-Climate change: the role of environmental monitoring in identifying anthropogenic causes.

9. (Weeks 13-14)

Practical analysis of some environmental monitoring data.

- Identification of environmental problems (e.g. rise in CO₂ concentration) from databases.

10. (Week 15)

Final examination.

11. (Week 16)

Feedback.

[履修要件]

This lecture only requires scientific backgrounds in natural sciences of high school levels.

[成績評価の方法・観点]

Evaluation will be:

Active participation in class: 20 pts

Assignments/projects at home: 40 pts

Final examination: 40 pts

[教科書]

Not used. Slide handouts will be distributed.

[参考書等]

(参考書)

J. Artiola, I. L. Pepper, M. L. Brusseau 『Environmental Monitoring and Characterization』 (Elsevier Science & Technology Books, March 2004,) ISBN:0120644770

[授業外学修(予習・復習)等]

Course materials are made available before class.

Students are encouraged to study materials before and after each session to assimilate technical or uncommon words.

Depending on the topic, the study of the materials and the preparation of the report for the evaluation may take a few hours a week.

[その他 (オフィスアワー等)]

Materials (pdf files) are available on KULASIS website. Communication by emails are possible for questions outside of class hours.