Course number	U-LAS70 10002 SE50				
Course title (and course title in English)	ILAS Seminar-E2 :Regional Disaster Prevention（地域防災学） ILAS Seminar-E2 :Regional Disaster Prevention	Instructor's name, job title, and department of affiliation	Graduate School of Agriculture Program-Specific Assistant Professor,KOCH, Michael Conrad		
Group	Seminars in Liberal Arts and Sciences	Number of credits	2	Number of weekly time blocks	1
Class style	seminar (Face-to-face course)	Year/semesters	2024・First semester	Quota (Freshman)	15 (15)
Target year	Mainly 1st year students	Eligible students	For all majors	Days and periods	Fri.5
Classroom	W402 (North Campus)			Language of instruction	English
Keyword	soil mechanics / dam failure / earthquake / tsunami / disaster management				

[Overview and purpose of the course]

This course will take a case study approach to regional disasters. The course contents will include learning of basic soil mechanics to determine the mechanism of failure of naturally occurring slopes. Such knowledge can be extremely valuable to inform future design. This will be supplemented with analysis of state-of-the-art research on disaster prevention technologies.

The course is intended to be a deep-dive into specific disasters like slope failures under heavy rainfall conditions, breakwater performance under tsunami impact etc. To this end, the course will introduce a few fundamental concepts in soil mechanics, engineering geology, hydraulics of groundwater as well as natural hazards. Along with such technical tools, students will also be introduced to the frameworks of vulnerability, risk assessment and disaster management.

[Course objectives]

After the successful completion of the course, students will be able (1) To understand fundamental physics concepts related to particular disasters, (2) to understand basic forensic analysis, (3) to analyse specific state of the art disaster mitigation technologies and (4) to perform basic vulnerability and disaster risk assessment.

[Course schedule and contents)]

The class in the first week will provide an overview of the contents of the course. As a general outline, the necessary concepts required to understand the basic mechanism of a particular disaster will be highlighted. Following this, students will work individually or in teams to analyze relevant case histories/experimental studies/research papers assigned to them. Students are expected to clearly (a) identify the problem (b) explain the failure mechanism or any other relevant result using the concepts taught and (c) provide critical comments wherever possible.

An indicative schedule for the course is as follows
(1) Introduction and highlights of case histories/experimental studies/research papers [1 week]
(2) Fundamental concepts related to regional disaster - 1 [3-4 weeks]
(3) Development of a numerical tool in MS-Excel for assessment of stability of naturally occurring slopes [2-3 weeks]
(4) Fundamental concepts related to regional disaster - 2 [2-3 weeks]

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(5) Analysis of case history/experimental studies/research papers - 2 [2-3 weeks]
(6) Understanding vulnerability: political, physical, social, economic and environmental factors [1 week]
(7) Disaster risk identification and assessment [1 week]
(8) Final presentation [1 week]
(9) Feedback [1 week]

Total: 14 classes and 1 feedback session

[Course requirements]

Beneficial but not mandatory: basic mathematics and physics (high school level). Students must be willing to work with basic mathematics.

[Evaluation methods and policy]

- Class participation (25%, students are expected to actively participate in discussion)
- Assignment report (30%)
- Oral presentation (45%)

[Textbooks]

Not used

[References, etc.]

（References, etc.）

Budhu M 『Soil mechanics and foundations』 （John Wiley & Sons）ISBN:13 978-0-471-43117-6
Journal papers related to case studies will be handed out during class.

[Study outside of class (preparation and review)]

Students are expected to be independent in finding online resources to attain relevant issues of discussion during seminar to enhance student interaction and understanding during classes.

[Other information (office hours, etc.)]

After class, student consultation will be arranged with prior notice.