科目ナンバリング	U-LAS70 10002 SE50						
授業科目名<英訳>	ILAS Seminar-E2 :Regional Disaster Prevention（地域防災学） ILAS Seminar-E2 :Regional Disaster Prevention			担当者所属職名・氏名	農学研究科　特定助教 SHARMA, Vikas		
群	少人数群	単位数	2単位	週コマ数	1コマ	授業形態	ゼミナール（対面授業科目）
開講年度・開講期	2026・前期	受講定員(1回生定員)	15 (15) 人	配当学年	主として1回生	対象学生	全学向
曜時限	水5	教室	農学部総合館W402 (北部構内)			使用言語	英語
キーワード	soil mechanics / dam failure / earthquake / tsunami / disaster management						

[授業の概要・目的]

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.

[到達目標]

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.

[授業計画と内容]

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]
(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]

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Total: 14 classes and 1 feedback session

[履修要件]

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

[成績評価の方法・観点]

- Class participation (30%)
- Assignment report (30%)
- Oral presentation (40%)

[教科書]

使用しない

[参考書等]

（参考書）

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.

[授業外学修（予習・復習）等]

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.

[その他（オフィスアワー等）]

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

[主要授業科目（学部・学科名）]