科目ナンバリング	U-LAS15 20010 LE58						
授業科目名<英訳>	Introduction to Hydrology-E2 Introduction to Hydrology-E2			担当者所属職名・氏名	防災研究所　教授　Sameh Kantoush		
群	自然科学科目群		分野(分類)	地球科学(発展)		使用言語	英語
旧群	B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	2026・前期	曜時限	木4	配当学年	主として1・2回生	対象学生	理系向

[授業の概要・目的]

Water is considered essential to life and, without a doubt, is vital to our lives. To manage the world's increasingly scarce water resources, we must understand how water moves around the planet and what influences water quality. This course aims to build a basic understanding to study the utilization of natural resources and natural disasters on the earth. Moreover, we will discuss water availability on the planet, basic hydrological phenomena to create water circulation and the water budget. Based on this basic knowledge, all students will study the earth's freshwater system and form a basis for mutual international understanding by comparing Japanese and foreign countries' case studies.

[到達目標]

The goals are to understand how hydrology and hydrological applications can be used to secure water for people, based on a sound scientific understanding of hydrologic processes and water budget.

Course Outcomes:

By the end of this course, students will:

- Be aware of water resources issues in Japan and global scale.
- Be able to qualitatively and quantitatively describe the main processes in the hydrologic cycle, surface, and groundwater hydrology.
- Be able to analyze hydrographs and understand the measurement of streamflow.

PRACTICAL SKILLS: On completion of this course students should be able to:
- Calculate the water budget of a watershed.
- Calculate average precipitation streamflow.
- Calculate infiltration.
- Estimate evaporation rates and evapotranspiration.
- Define the relationship between rainfall and hydrograph analysis.
- Measure the flow discharge and velocity in the stream.

[授業計画と内容]

Week 1: Introduction: Hydrological Cycle and Processes
Week 2-3: Water Budget and cloud formation
Week 4: Precipitation Forms, Types, and Measurements
Week 5: Rainfall statistics: Areal Precipitation& Data Analysis
Week 6: Runoff and Hydrographs: Measuring Surface Runoff River
Week 7: Evaporation: Process, Measurement, and Estimation
Week 8-9: Infiltration: Process, Measurement, and Estimation
Week 10-11: Semester Project Presentations

Introduction to Hydrology-E2(2)へ続く↓↓↓

Introduction to Hydrology-E2(2)

Week 12: Groundwater Hydrology
Week 13-14: Flooding: Monitoring, Prediction, and Mitigation
Week 15: Feedback

[履修要件]

特になし

[成績評価の方法・観点]

The student will be assessed in the course based on assignments (30%), class attendance, chapter readings, in-class active participation (30%), and the semester project report and presentation (40%).

[教科書]

授業中に指示する

[参考書等]

（参考書）
授業中に紹介する

[授業外学修（予習・復習）等]

The instructor will provide additional materials, solved examples, and model answers for assignments.

[その他（オフィスアワー等）]

Class participation and questions are very welcome during the lectures or at the end of the lecture. The schedule of office hours will be announced later. Moreover, if you have extra questions, students may contact instructor by email.

[主要授業科目（学部・学科名）]