

Course number		U-LAS15 20010 LE58					
Course title (and course title in English)		Introduction to Hydrology-E2 Introduction to Hydrology-E2		Instructor's name, job title, and department of affiliation		Disaster Prevention Research Institute Professor, Sameh Kantoush	
Group	Natural Sciences		Field(Classification)		Earth Science(Development)		
Language of instruction	English		Old group	Group B		Number of credits	2
Number of weekly time blocks	1	Class style	Lecture (Face-to-face course)		Year/semesters	2025 • First semester	
Days and periods	Tue.4		Target year	Mainly 1st & 2nd year students		Eligible students	For science students
[Overview and purpose of the course]							
<p>The aim of this course is to build basic understandings to study utilization of natural resources and natural disasters in the earth. This lecture explains water availability in the earth, basic hydrological phenomena to create water circulation and water budget. Based on this basic knowledge, all students will study current technical issues to be solved, and create basis for mutual international understandings by comparing Japan and foreign countries case studies.</p>							
[Course objectives]							
<p>The goals are to develop an understanding of how hydrology and hydrological applications can be used to secure water for people, based on a sound scientific understanding of hydrologic and hydraulic processes. This includes protection from excess water and from water shortage, as well as providing sufficient water for a sustainable environment.</p> <p>Course Outcomes: The aim of this course is to introduce the basic elements of hydrologic cycle for surface and groundwater systems. At the end of this course the student will be able to:</p> <ul style="list-style-type: none"> - be aware of water resources issues in national and global scale, - be able to qualitatively and quantitatively describe the main processes in the hydrologic cycle, and surface and ground water hydrology - be able to provide solutions for typical water resources problems found in practice; <p>PRACTICAL SKILLS: On completion of this course students should be able to:</p> <ul style="list-style-type: none"> - Calculate the water budget of a watershed; - Calculate average precipitation stream flow and stage discharge relationship; - Calculate infiltration employing several models; - Estimate evaporation rates and evapotranspiration; - Define the relationship between rainfall and hydrograph analysis; - Measure the flow discharge and velocity in the stream 							
[Course schedule and contents)]							
Week 1: Introduction: Hydrological Cycle and Processes Week 2: Precipitations Forms, Types, and Rainfall Measurements Week 3: Hydrologic Abstractions							
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Introduction to Hydrology-E2(2)

Week 4: Areal Precipitation and Data Analysis
Week 5: Infiltration: Process, Measurement, and Estimation
Week 6: Evaporation: Process, Measurement, and Estimation
Week 7: Hydrology of Japan and water resources sustainability
Week 8: Runoff and Hydrographs
Week 9: Groundwater Hydrology
Week10: Groundwater Hydrology
Week11: Stream Flow Measurements
Week12-13: Flooding
Week14: Monitoring Techniques
Week15: Final Report
Week16: Feedback

[Course requirements]

None

[Evaluation methods and policy]

Student will be assessed in the course based on quiz during regular lectures, reports, in class assessment and active participation (40%) and a final report (60%).

[Textbooks]

Martin R. Hendriks 『Introduction to Physical Hydrology』 (Oxford) ISBN:978-0-19-929684-2
Warren Viessman, Gary Lewis 『Introduction to Hydrology』 (Prentice Hall) ISBN:978-0673993373
P. Jaya Rami Reddy 『A Text Book of Hydrology』 (University Science Press) ISBN:978-9380856049

[Study outside of class (preparation and review)]

Students are requested to read carefully listed textbook and access to case studies on each hydrological process through website and related literatures.

[Other information (office hours, etc.)]

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 question, students may contact me by email.

[Essential courses]