

科目ナンバリング											
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	2024・前期		曜時限	火4		配当学年	主として1・2年生	対象学生	理系向		
【授業の概要・目的】											
<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>											
【到達目標】											
<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:</p> <p>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 											
【授業計画と内容】											
<p>Week 1: Introduction: Hydrological Cycle and Processes</p> <p>Week 2: Precipitations Forms, Types, and Rainfall Measurements</p> <p>Week 3: Hydrologic Abstractions</p> <p>Week 4: Areal Precipitation and Data Analysis</p> <p>Week 5: Infiltration: Process, Measurement, and Estimation</p> <p>Week 6: Evaporation: Process, Measurement, and Estimation</p> <p>Week 7: Hydrology of Japan and water resources sustainability</p> <p>Week 8: Runoff and Hydrographs</p> <p>Week 9: Groundwater Hydrology</p>											
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Week10: Groundwater Hydrology
Week11: Stream Flow Measurements
Week12-13: Flooding
Week14: Monitoring Techniques
Week15: Final Report
Week16: Feedback

【履修要件】

特になし

【成績評価の方法・観点】

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%).

【教科書】

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

【授業外学修（予習・復習）等】

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

【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 question, students may contact me by email.