

Water Resources Systems

United Nations University (UNU-IAS)

Autumn 2023

Location: 6F Lecture Room

Time: From October 2023 until February 2024

Lecturer: Jian Pu, Marcin Jarzebski

Contact Information: (pu@unu.edu)

Office Hours: by appointment

As of 15 June 2023 (Subject to change)

Course Description

Water resources are under immense pressure due to increases in water demand owing to population growth and expanded industrial and economic activity. The stress has been further exacerbated by increasing water pollution and global climate change. Adequate water quality and quantity are essential for the sustainable growth of any region or country. This course aims to provide a broad understanding of hydrological processes, socio-economic development, global environmental changes, and their roles and interaction in water resources management. This course highlights integrated watershed management, providing watershed and system concepts. The course offers various issues related to water resources and sustainability through case studies and field visits.

Course Objectives and Learning Goals

The students will gain a comprehensive overview of water and its relation to human and environmental well-being. The students will be familiar with global and regional water-related issues and acquire basic knowledge and techniques to manage water-related problems.

Requirements and Grading Policy

Assessment will be based on class attendance, presentation and discussion, a short final test and extended essay with the following allocations;

- *Active attendance: 20 % of total marks (80 % attendance is required)*
- *Assignment: 50% of total marks (Critical review on topics chosen by the students based on the above lectures)*
- *Presentation: 30% of total marks (30 minutes presentation on water resource systems including question and answers, maximum number of slides not more than 30)*

Class Participation

The course requires students to attend all classes, to finish tasks in each class. At the discretion of the instructor, frequent late arrivals or absences may result in a lower grade. Please note that the first session is of particular importance and cannot be missed. Materials of each class will be shared by the instructor before the class.

Course Outline

Lecture No.	Title	Date	Instructors/Invited Speakers if any
1	The world's fresh water resources	October 5 (Thu) 11:20-13:00	
2	Water and sustainability	October 12 (Thu) 11:20-13:00	
3	Water withdrawals and uses	October 19 (Thu) 11:20-13:00	
4	Water quality and water sanitation	October 26 (Thu) 11:20-13:00	Jian Pu
5		November 2 (Thu) 11:20-13:00	
6	Wastewater treatment systems 1	November 9 (Thu) 11:20-13:00	Jian Pu
7	Wastewater treatment systems 2	November 16 (Thu) 11:20-13:00	Jian Pu
8	Field Trip to Shibaura Water Reclamation Center (Duration: 2h30min)	November 23 (Thu) 11:20-13:00 → UNUH or November 22 (Wed) 11:20-13:00	Jian Pu
9	How companies' ESG action influences their financial performance - a quantitative study focusing on water-related data in private sector	November 30 (Thu) 11:20-13:00	Jian Pu/Dr. Jiaqi Yang
10	Water economy with practical exercises	December 7 (Thu) 11:20-13:00	Jian Pu/Dr. Geetha Mohan (Speaker will be online)
11	Field Trip to Kuramae Water House (Duration: 2h30min)	December 14 (Thu) 11:20-13:00 → MIPA10 Or December 13 (Wed) 11:20-13:00	Marcin Jarzebski

12		January 4 (Thu) 11:20-13:00	
13		January 11 (Thu) 11:20-13:00	Marcin Jarzebski
14		January 18 (Thu) 11:20-13:00	Marcin Jarzebski

Course Readings

- *Water Resources Engineering* by Larry W. Mays, John Wiley & Sons, 2nd Edition, 2010.
- *IPCC AR5 WG 2 Summary report for policy makers*, 2014.
- *World Water Assessment Programme (2009): The United Nations World Water Development Report 3. Water in a Changing World, UNESCO, Part 1 (Ch. 1, 3, 5), Part 2(Ch. 7, 8), Part 3(Ch. 10,11)*
- *Water Evaluation and Planning System (2012): A collection of stand-alone modules to aid in learning the WEAP software* (<http://www.weap21.org/index.asp?action=213>)

Additional reading materials: to be determined and selected by instructors for each session.

Important Information

Class Conduct & Etiquette

Students are expected to arrive on time and not to engage in disruptive behavior during class. This includes, among other things, private side conversations, the use of cellphones and other electronic devices, or the reading of newspapers. Cellphones should be switched off and stored in the bag. We wish to create an atmosphere of open and tolerant discussion in the classroom and request students to recognize every individual's right to have an opinion. The lecturer and other students should be treated with dignity and respect, in discussions on contentious political issues where a diversity of opinion is likely to arise. However, we also recognize that there are limits to tolerance and the lecturer reserves the right to request disciplinary action against any student who violates this policy or repeatedly shows disruptive behavior in class.

Academic Misconduct

If evidence of academic misconduct on tasks and final test should be found, the student may receive a failing grade for the entire course and will be reported to the appropriate authorities for disciplinary action.

Invited Speakers/Lecturers Bio

Dr. Geetha Mohan (Lecture 9)

Professor, Center for Far Eastern Studies, Toyama University, Japan

Geetha Mohan joined the Center for Far Eastern Studies (CFES) as a Professor in May 2022. He holds his doctoral degree in Economics from India. Before joining the University of Toyama, Dr Mohan worked as a Research Fellow at the United Nations University Institute for the Advanced Study of Sustainability. He has more than one decade of experience in sustainability science studies, climate change adaptation, impact assessment, the economics of climate change, water management, and impact assessment.

Dr. Jiaqi Yang (Lecture 12)

Data Scientist & ESG Analyst, Sustainable Lab Inc., Japan

Jiaqi Yang holds a doctoral degree in Environmental Studies from The University of Tokyo. He is working as data scientist in Sustainable lab Inc, a Japanese fintech start-up company specializing in ESG/SDGs big data. He is specifically in charge of ESG/SDGs data research and analysis. He holds his PhD degree in Sustainability science from the University of Tokyo. Before joining the current company, he also did internship at the United Nations Department of Economic and Social Affairs (UNDESA) with experience in designing evaluation on SDGs practices.

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Computer Use in Class

The use of computers (including tablets) in the classroom is restricted to taking notes, reading the course material, or searching for course-related information on the internet. Any disruption of the class by cell phones, instant messaging programs, or other communication devices will not be tolerated. The lecturer reserves the right to revoke this permission if a student is found using a computer for any non-course-related activities.

Plagiarism & Academic Misconduct

Please be aware that the consequences of plagiarism are severe, and students found guilty of academic misconduct will be punished in accordance with UNU's academic honesty policies. The lecturer reserves the right to run all assignments through anti-plagiarism software provided by the UNU. If evidence of academic misconduct on the assigned presentations, the mid-term exam or the final essay should be found, the assignment will receive a failing grade. In case of repeated violations of academic conduct, the student may receive a failing grade for the entire course and will be reported to the appropriate authorities for disciplinary action.