Water Resource Economics
ECON 484/673

Fall 2020 - Course Outline

Professor: Roy Brouwer
Class time and location: asynchronous online
Consultation hours: Fridays 9:00 – 11:00 am local time Waterloo
Contact information: rbrouwer@uwaterloo.ca

Course description:
This is a topics course. The course consists of classes in which the economics of major global water management challenges will be addressed, including droughts and water scarcity, climate change and flood risks, water quality management, and the water-food-energy nexus. Particular attention will be paid to water resource valuation and pricing, focusing on market and non-market valuation methods.

Due to the COVID-19 pandemic, this course has been converted into an asynchronous remote online course. Students will be given a number of small individual assignments during the course which cover the material addressed during a specific week. Students have each time 3 days to complete and submit these short assignments.

In addition, each student will write:
(1) a review discussion paper (between 2,000-2,500 words) about an article of their own choice published in the journal Water Resources & Economics. Students can work on this review paper from the beginning of the course. Once they identified an article of interest, they inform the instructor about the selected article and after the instructor approved the article, they can start reviewing and discussing it. This review paper is due at the end of the course on or before December 4, 2020.

(2) an assignment paper (between 3,500-4,000 words) about a real-world transboundary water management challenge for which empirical data will be made available to conduct a Cost-Benefit Analysis (CBA). The challenge will be further detailed in week 4 during the class about CBA. This assignment paper is also due on or before December 4, 2020.

The review discussion paper will count for 30% of the overall grade and the assignment paper for 40%. Together, the short assignments count 30% towards the final grade. There is no final exam for this course, the final grade is based on the review and assignment paper which are due by the end of the course and the short assignments during the course.

Course schedule

Week	Date	Course description	Reading material	Assignment	Weight
1	09/07-09/11	Course introduction, key aspects water	Olmstead (2010a,b)	No	n.a.
2	09/14-09/18	Supply and demand of water	Griffin, chapter 2	No	n.a.
3	09/21-09/25	Empirical estimation supply & demand	Griffin, chapter 3	Short exercise	5%
4	09/28-10/02	Cost-benefit analysis	Griffin, chapter 7	Paper assignment	40%
5	10/05-10/09	Water pricing	Griffin, chapter 9	Short exercise	5%
6	10/12-10/16	**Reading week**			
7	10/19-10/23	Water game	Seibert and Vis (2012)	Short exercise	10%
8	10/26-10/30	Watershed cooperation & PWS	Brouwer et al. (2011)	No	n.a.
9	11/02-11/06	Economic valuation of water	Young, chapter 2	Short exercise	5%
10	11/09-11/13	Nonmarket valuation methods: TC&HP	Young, chapter 4	No	n.a.
11	11/16-11/20	Nonmarket valuation methods: CV	Khan et al. (2014)	Short exercise	5%
12	11/23-11/27	Nonmarket valuation methods: CE	Brouwer et al. (2010)	No	n.a.
13	11/30-12/04	Recap: what have we learned?		Paper review	30%
Final grade					100%

Explanatory notes:
n.a. not applicable
PWS: Payments for Watershed Services
TC: Travel Cost method
HP: Hedonic Pricing method
CV: Contingent Valuation method
CE: Choice Experiments

The course grade will be made at the discretion of the instructor. The guidelines for this are as follows. All components making up the final grade (short assignments, review paper, assignment paper) are equally graded and weighted across undergraduate and graduate students. Graduate students will be given an extra question in the short exercise linked to the water game in week 7 that all students will play remotely online. Instructions for the water game will be provided in the first weeks of the course. The course schedule above includes the overview of assignments and their weights.

Required background: Knowledge of microeconomic theory, basic calculus and linear algebra and some experience with differential equations are required.

Readings:

Brouwer, R., Dekker, T., Rolfe, J. and Windle, J. (2010). Choice certainty and consistency in repeated choice experiments. Environmental and Resource Economics, 46, 93-109. https://doi.org/10.1007/s10640-009-9337-x

Brouwer, R., Tesfaye, A. and Pauw, P. (2011). Meta-analysis of institutional-economic factors explaining the environmental performance of payments for watershed services. Environmental Conservation, 38(4): 380-392. https://doi.org/10.1017/S0376892911000543

Griffin, R.C. (2016). Water resource economics. The analysis of scarcity, policies and projects. Cambridge, MA, MIT Press, 2nd edition.

Khan, N., Brouwer, R. and Yang, H. (2014). Household's willingness to pay for arsenic safe drinking water in Bangladesh. Journal of Environmental Management, 143: 151-161. https://doi.org/10.1016/j.jenvman.2014.04.018

Olmstead, S.M. (2010a). The economics of managing scarce water resources. Review of Environmental Economics and Policy, 4(2): 179-198. https://doi:10.1093/reep/req004

Olmstead, S.M. (2010b). The economics of water quality. Review of Environmental Economics and Policy, 4(1): 44-62. https://doi.org/10.1093/reep/rep016.

Seibert, J. and Vis, M.J.P. (2012). Irrigania – a web-based game about sharing water resources. Hydrology and Earth System Sciences, 16:2523-2530. doi:10.5194/hess-16-2523-2012.

Young, R. (2005). Determining the economic value of water. Concepts and methods. Resources for the Future Press. Washington, USA.

Economics Department Deferred Final Exam Policy

Deferred Final Exam Policy found at https://uwaterloo.ca/economics/undergraduate/resources-and-policies/deferred-final-exam-policy

Cross-listed course

Please note that a cross-listed course will count in all respective averages no matter under which rubric it has been taken. For example, a PHIL/PSCI cross-list will count in a Philosophy major average, even if the course was taken under the Political Science rubric.

Academic Integrity

Academic Integrity: In order to maintain a culture of academic integrity, members of the University of Waterloo are expected to promote honesty, trust, fairness, respect and responsibility. See the UWaterloo Academic Integrity webpage and the Arts Academic Integrity webpage for more information.

Discipline: A student is expected to know what constitutes academic integrity, to avoid committing academic offences, and to take responsibility for his/her actions. A student who is unsure whether an action constitutes an offence, or who needs help in learning how to avoid offences (e.g., plagiarism, cheating) or about "rules" for group work/collaboration should seek guidance from the course professor, academic advisor, or the Undergraduate Associate Dean. When misconduct has been found to have occurred, disciplinary penalties will be imposed under Policy 71 – Student Discipline. For information on categories of offenses and types of penalties, students should refer to Policy 71 - Student Discipline. For typical penalties check Guidelines for the Assessment of Penalties.

Grievance: A student who believes that a decision affecting some aspect of his/her university life has been unfair or unreasonable may have grounds for initiating a grievance. Read Policy 70 - Student Petitions and Grievances, Section 4. When in doubt, please be certain to contact the department's administrative assistant who will provide further assistance.

Appeals: A decision made or penalty imposed under Policy 70 - Student Petitions and Grievances (other than a petition) or Policy 71 - Student Discipline may be appealed if there is a ground. A student who believes he/she has a ground for an appeal should refer to Policy 72 - Student Appeals.

Accommodation for Students with Disabilities

Note for students with disabilities: The AccessAbility Services office, located on the first floor of the Needles Hall extension (1401), collaborates with all academic departments to arrange appropriate accommodations for students with disabilities without compromising the academic integrity of the curriculum. If you require academic accommodations to lessen the impact of your disability, please register with the AS office at the beginning of each academic term.