

Water Resource Economics

ECON 484/673

Fall 2019 - Course Outline

Professor: Roy Brouwer

Class time and location: Fridays 8:30 – 11:20 am, room HH 138

Office hours: Fridays 11:30 – 1:00 pm, room EIT 3003

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. In addition, students will play a water game, and write an assignment paper about an existing transboundary water management challenge, involving trade-offs between water, energy and food security, using a cost-benefit analysis framework. The paper assignment will count for 25% of the overall grade. The course will end with a final exam, which will make up 75% of the final grade for the course. The exam will be based on the material covered in class.

The course grade will be made at the discretion of the instructor. The guidelines for this are as follows. The paper assignment is equally graded and weighted across undergraduate and graduate students. In the final exam, there will be an extra question for the graduate students.

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

Readings:

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

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/req/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/req/rep016>.

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

Course schedule:

Week 1 (09/06)	Course introduction - Economics of managing water resources (Olmstead, 2010a)
Week 2 (09/13)	Supply and demand of water and optimal water allocation (Griffin, chapter 2)
Week 3 (09/20)	Water pricing (Griffin, chapter 9)
Week 4 (09/27)	Cost-benefit analysis (Griffin, chapter 3 and 7)
Week 5 (10/04)	Water resources valuation (Young, chapter 4)
Week 6 (10/11)	Water computer game
Week 7 (10/18)	Reading week
Week 8 (10/25)	Student presentations CBA of hydropower dam building (water-food-energy nexus)
Week 9 (11/01)	Visit wastewater treatment plant
Week 10 (11/08)	Economics of water quality management (Olmstead, 2010b)
Week 11 (11/15)	Valuation of drinking and irrigation water supply (Young, chapter 5 and 7)
Week 12 (11/22)	Valuation of industrial water use and environmental water quality (Young, chapter 6 and 8)
Week 13 (11/29)	What have we learned?

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.