

ERS 316: Fall 2015
Urban Water and Wastewater Systems: Integrated Planning and Management
Department of Environment and Resource Studies, University of Waterloo

1. Course Information

Professor:	Sarah Wolfe (EV2 2011; sewolfe@uwaterloo.ca) <i>I cannot respond to course-related emails between 5pm - 9am.</i>
Seminar:	Thursdays 10:30am -12:20pm in DWE 3522A
Office Hours:	Thursdays 1:00-2:00pm in EV2 2011
D2L	Available; class announcements; resources; grades etc
Laptop policy:	Please use your laptops for taking course-related notes during class. Please refrain from surfing, chatting, downloading video, social network sites etc. Research has shown that all students who multi-task during seminars retain less information (Hemebrooke and Gay 2003) and achieve lower final grades (Ellis et al., 2010).

2. Context, Content and Teaching Methods

Earth and sky, woods and fields, lakes and rivers, the mountain and the sea, are excellent schoolmasters, and teach some of us more than we can ever learn from books. John Lubbock

Context:

This is an elective course designed for senior students interested in urban environmental issues, with a focus on water services (drinking, waste, safety). Students should have previous knowledge of water issues, for example, from completing ERS 111. This seminar extends concepts learned in ERS 265 (Water History), complements ERS 365 (Water Governance) and is an essential foundation for a senior thesis (ERS 411) or interdisciplinary graduate studies on water issues.

Content:

We focus on urban water management in North America, Australia, Western Asia and the Global South as illustrative systems or cases. Our starting premise is that changing climate conditions will increase uncertainty, the likelihood of extreme events (e.g., urban flooding and drought) and requirements for new water management approaches. We examine the development and maintenance of urban water and wastewater systems, along with demand and supply management planning, efficiency mechanisms, development and equity concerns.

Methods:

- Readings are the foundation of this course. Readings must be done BEFORE the assigned class meeting.
- Seminar discussions and guest lectures provide an overview of key concepts and highlight important ideas from the readings.
- In class activities are cumulative critical to your success in this course because they lead to deep learning (i.e., depth and breadth). You'll need to apply what you've learned from both the seminar notes and readings material to effectively participate in class discussions and activities.
- Virtual field trip(s) provide additional key concepts explored in the textbook and in class discussions. This material is considered part of the course content.

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3. Learning Outcomes

By the end of each **week** you will be able to.....

1. Articulate and summarize the key concepts from the readings and class time.
2. Express the key concepts using different modes (e.g., prose, concept maps, bullets, tables) to organize your thoughts.

By the end of the **semester** you will be able to....

1. Identify and describe municipal water and wastewater systems and their subcomponents (*content knowledge*).
2. Explain, using case examples, how climate change influences water management components at a municipal scale (*content + comprehension knowledge*).
3. Assess the benefits and problems associated with water efficiency technologies, techniques in different municipal applications, e.g., residential and Industrial-Commercial-Institutional) and contexts, e.g., North America vs. Global South cities (*content + comprehension + application knowledge*).
4. Recognize and evaluate the positions, assumptions and conventions within the water management literature by dissecting specific debates, e.g., supply vs. demand paradigms; water pricing and social equity etc. (*content + comprehension + application + analysis and evaluation knowledge*).

4. Required and Recommended Textbooks (Books are available through the bookstore but also lots of used copies in circulation.)

- Required: Yudelson, Jerry (2010). *Dry Run: Preventing the next urban water crisis*. New Society Publishers.
- Required: Feitelson, E. (2012). 'What is water: A normative perspective'. *Water Policy* 14, 52-64. (Available in D2L)
- Recommended: Hay, Iain and Philip Giles (2010). *Communicating in Geography and Environmental Sciences: Canadian Edition (Paperback)*. Oxford University Press. Available at the bookstore.

5. COURSE ASSIGNMENTS

This syllabus is a contract between us: if you have any questions, please speak with me before September 24th 2015.

ASSIGNMENT	VALUE
In Class Test A (Foundation weeks 2 and 3)	20%
In Class Test B (Foundation weeks 4, 5, and 6)	30%
In Class Test C (Problem Recognition week 7)	20%
In Class Test D (Solution Identification weeks 9, 10 and 11)	30%

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6. COURSE PLAN and READINGS SCHEDULE

Week	Objective	Weekly Content
Week 1 (Sept 17)	<i>Learning Logistics</i>	Admin and course review: context, structure, readings, classroom logistics etc http://www.theatlantic.com/education/archive/2014/01/students-should-be-tested-more-not-less/283195/
Week 2 (Sept 24)	Foundation Building	Seminar Concept(s): urban water history Readings: Yudelson Chapter 1
Week 3 (Oct 1)		Seminar Concept(s): Components of urban water and wastewater infrastructure Readings: Yudelson Chapter 4; <i>Virtual Fieldtrip: Liquid Assets: urban water management and infrastructure</i>
Week 4 (Oct 8)	<i>Learning Assessment</i>	In Class Test A (Weeks 2 and 3) Seminar Concept(s): blue and grey water Readings: Yudelson Chapters 7 and 8; Feitelson article <i>Guest: TBD, Region of Waterloo water treatment</i>
Week 5 (Oct 15)		Seminar Concept(s): brown and black water Readings: Yudelson Chapters 9 and 10 <i>Guest: Trevor Brown, Region of Waterloo wastewater management</i>
Week 6 (Oct 22)		Seminar Concept(s): green water and 'new' water supplies Readings: Yudelson Chapters 11 and 13 <i>Guest: Kurtis Elton, City of Toronto storm water management</i>
Week 7 (Oct 29)		In Class Test B (Weeks 4, 5 and 6)
Week 8 (Nov 5)	Problem Recognition	Seminar Concept(s): patterns and crises in urban water use Readings: Yudelson Chapters 2 and 3 <i>Virtual Fieldtrip: Journey on Planet Earth Urban Explosion</i>
Week 9 (Nov 12)	<i>Learning Assessment</i> Solution Identification	In Class Test C (Week 8) Seminar Concept(s): Key concepts of residential water efficiency Readings: Yudelson Chapter 6
Week 10 (Nov 19)		Seminar Concepts: Industrial, Commercial and Institutional (ICI) water efficiency Readings: Yudelson Chapter 5 <i>Guest: Dan Meagher, Region of Waterloo efficiency programing</i>
Week 11 (Nov 26)		Seminar Concept(s): Preventing the next urban water crisis Readings: Readings: Yudelson Chapter 15
Week 12 (Dec 3)	<i>Learning Assessment</i>	In Class Test D (Weeks 9, 10, 11)

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7. THE STUDENT'S RESPONSIBILITIES

As a student at the University of Waterloo, you have the following responsibilities. Contact me to discuss any concern you have regarding your responsibilities as outlined here.

Communication: It is your responsibility to check the course web page for information and updates. Also, as per university regulations, e-mail is the official route of communication between the University and its students. You are required to check your uwaterloo.ca e-mail account regularly (at least once per day). If you use another e-mail service, it's your responsibility to ensure that mail sent to your university account is forwarded.

When You Cannot Meet a Course Requirement: When you find yourself unable to meet an in-course requirement because of medical, psychological or compassionate reasons, please advise me in writing (preferably by e-mail), with your name, student ID number, and e-mail contact information. Where possible, this should be done in advance of the assignment due date, but otherwise as soon as possible after the due date. As a rule, you must provide appropriate documentation, for example, a note from your doctor indicating the dates during which you were ill, and describing the severity of your illness. You are required to attend (and participate in) all of the class meetings and field trips. Assignments must be submitted in D2L on the designated day and time.

Manage your time carefully: Pressure of work alone is not an acceptable reason for seeking an extension without penalty. See the undergraduate calendar for additional information on regulations and procedures for Academic Consideration.

8. ACADEMIC INTEGRITY

Academic Integrity: In order to maintain a culture of academic integrity, members of the University of Waterloo community are expected to promote honesty, trust, fairness, respect and responsibility. www.uwaterloo.ca/academicintegrity/. Students who are unsure what constitutes an academic offence are requested to visit the on-line tutorial at: <http://www.lib.uwaterloo.ca/ait/>

Research Ethics: Please also note that the 'University of Waterloo requires all research conducted by its students, staff, and faculty which involves humans as participants to undergo prior ethics review and clearance through the Director, Office of Human Research and Animal Care (Office). The ethics review and clearance processes are intended to ensure that projects comply with the Office's Guidelines for Research with Human Participants (Guidelines) as well as those of provincial and federal agencies, and that the safety, rights and welfare of participants are adequately protected. The Guidelines inform researchers about ethical issues and procedures which are of concern when conducting research with humans (e.g. confidentiality, risks and benefits, informed consent process, etc.). If the development of your research proposal consists of research that involves humans as participants, the please contact the course instructor for guidance and see: www.research.uwaterloo.ca/ethics/human/

Note for students with disabilities: The Office for Persons with Disabilities (OPD), located in Needles Hall, Room 1132, 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 OPD at the beginning of each academic term.

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Religious Observances: Please inform the instructor at the beginning of term if special accommodation needs to be made for religious observances that are not otherwise accounted for in the scheduling of classes and assignments.

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, www.adm.uwaterloo.ca/infosec/Policies/policy70.htm. When in doubt, please contact your Undergraduate Advisor for details.

Discipline: A student is expected to know what constitutes academic integrity, to avoid committing academic offence, and to take responsibility for his/her actions. A student who is unsure whether an action constitutes an offense, or who needs help in learning how to avoid offenses (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. For information on categories of offences and types of penalties, students should refer to Policy 71, Student Discipline, www.adm.uwaterloo.ca/infosec/Policies/policy71.htm. For typical penalties, check Guidelines for Assessment of Penalties, www.adm.uwaterloo.ca/infosec/guidelines/penaltyguidelines.htm

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). See: www.adm.uwaterloo.ca/infosec/Policies/policy72.htm

Consequences of Academic Offences:

A student is expected to know what constitutes academic integrity, to avoid committing academic offenses, and to take responsibility for his/her actions. A student who is unsure whether an action constitutes an offense, or who needs help in learning how to avoid offenses (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,

Within ENV, those committing academic offences (e.g. cheating, plagiarism) will be placed on disciplinary probation and will be subject to penalties which may include a grade of 0 on affected course elements, 0 on the course, suspension, and expulsion.

Students who believe that they have been wrongfully or unjustly penalized have the right to grieve; refer to Policy #70, Student Grievance,

ENV students are strongly encouraged to review the material provided by the university’s Academic Integrity office (see: <http://uwaterloo.ca/academicintegrity/Students/index.html>).