

FINAL ERS 316: Fall 2013
Urban Water and Wastewater Systems: Integrated Planning and Management
Department of Environment and Resource Studies, University of Waterloo

1. COURSE INFORMATION

Professor:	Sarah Wolfe (ES2 2011; sewolfe@uwaterloo.ca) <i>I cannot respond to course-related emails between 5pm - 9am.</i>
Seminar:	Wednesday 12:30-2:20 in OPT 309
Office Hours:	Wednesday 2:30-3:30 in EV2 2011
D2L	Available; class announcements; resources; and all assignments submitted as e-copies to D2L
Laptop policy:	Please use your laptops for course-related notes. 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) and comparative international development. Students should have previous knowledge of water issues (e.g., ERS 111). This seminar builds on concepts learned in ERS 265 (Water History) and complements ERS 365 (Water Governance) and could be considered a useful foundation for a senior thesis (ERS 411) 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 the likelihood of extreme events (e.g., urban flooding and drought) and new water management challenges. 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 and actual field trip(s) provide applied learning opportunities for the key concepts explored in the textbook and in class discussions.

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3. Learning Outcomes

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

- 1W. Articulate and summarize the key concepts from the readings and class time. These summaries will be assessed and will reinforce the key concepts throughout the semester in preparation for the final paper.
- 2W. Express the key concepts using different modes (e.g., prose, concept maps, bullets, tables) to organize your thoughts. Using different modes will allow you to master different communication methods and become more effective writers and communicators in the final presentation.

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

- 1S. Identify and describe municipal water and wastewater systems and their subcomponents (*content knowledge*).
- 2S. Explain, using case examples, how climate change influences water management components at a municipal scale (*content + comprehension knowledge*).
- 3S. 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*).
- 4S. 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 TEXT BOOKS

- Yudelson, Jerry (2010). *Dry Run: Preventing the next urban water crisis*. New Society Publishers. Available through the bookstore
- Hay, Iain and Philip Giles (2010). *Communicating in Geography and Environmental Sciences: Canadian Edition (Paperback)*. Oxford University Press. Available at the bookstore.

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5. COURSE PLAN and READINGS SCHEDULE

Week 1 (Sept 11)	Admin and course review: Readings, assignments, fieldtrips etc
Week 2 (Sept 18)	Seminar Concept(s): urban water history Readings: Yudelson Chpt 1 Virtual Fieldtrip: How the earth changed history (water)
Week 3 (Sept 25)	Seminar Concept(s): patterns and crises in urban water use Readings: Yudelson Chpts 2 and 3 Virtual Fieldtrip: Journey on Planet Earth: Urban Explosion –or – Liquid City. Due Sept 26 in D2L: Summary #1 (prose)
Week 4 (Oct 2)	Seminar Concept(s): Components of urban water and wastewater infrastructure Readings: Yudelson Chpt 4 Virtual Fieldtrip: Liquid Assets, urban water management and infrastructure
Week 5 (Oct 9)	GUEST LECTURE: Key concepts of residential and ICI water efficiency →H. Yates, City of Guelph →G. Pleasance, Region of Durham Readings: Yudelson Chpts 5 and 6 Due Oct 10 in D2L: Summary #2 (concept map/web)
Week 6 (Oct 16)	Seminar Concept(s): blue and grey water Readings: Yudelson Chpts 7 and 8 Due during office hours: Team paper outline discussion meeting
Week 7 (Oct 23)	Seminar Concept(s): brown and black water Readings: Yudelson Chpts 9 and 10 Virtual Fieldtrip: From the River to the River (Manheim Treatment Plant) Virtual Guest Lecture: Water Supply and Directions in Waterloo Region (preps for fieldtrip next week) Due Oct 24 in D2L: Summary #3 (table)
Week 8 (Oct 30)	Fieldtrip Concepts: Industrial, Commercial and Institutional (ICI) water savings strategies and successful case studies Field Trip: Brick Brewery, Chicopee
Week 9 (Nov 6)	Seminar Concept(s): how to effectively review and revise an academic paper or report In class working session: draft paper Peer Review Due as hardcopy in class and D2L: team draft paper
Week 10 (Nov 13)	Seminar Concept(s): 'new' water supplies Readings: Yudelson Chpt 11 and Chpt 13
Week 11 (Nov 20)	Seminar Concept(s): Preventing the next urban water crisis Readings: Readings: Yudelson Chpt 15 Due November 21 in D2L: Summary #4 (prose)
Week 12 (Nov 27)	Due as hardcopy in class and D2L: final paper Due in class: poster session as a 'mini conference'

For the mandatory field trip departs at 12:30 and returns by 3:30 or 4pm depending on traffic. The bus pick-up is by the pull-off area outside of EV2. You must complete and submit both a field trip "Letter of Understanding" and pay a \$20 fee.

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6. COURSE ASSIGNMENTS

This syllabus is a contract between each of you and the course professor. If you have any questions, please speak with the professor before September 18th 2013.

LEARNING OUTCOMES	ASSIGNMENT DUE	VALUE	DUE DATE
1W; 2W; 1S; 2S	Summary 1 (prose)	10%	September 26 th
	Summary 2 (concept map or web)	10%	October 10 th
	Summary 3 (table)	10%	October 24 th
	Summary 4 (prose)	10%	November 21 st
3S; 4S	Team Paper Outline and Meeting	10%	October 16 th
	Team Draft Paper and Peer Review	10%	November 6 th
	Team Final Paper	35%	November 27 th
2W; 3S; 4S	Team Poster Session	10%	November 27 th

The full assignment descriptions – along with evaluation rubrics – are available through D2L. **All assignments must be submitted to their D2L dropbox the day they are due. The dropbox opens at midnight and closes at 12:30pm.**

Unless you have made advance arrangements with me – based on medical or family emergencies – I do not accept late assignments. If this arrangement is not made, late assignments will be penalized at **5 percent (5%) of the value of the assignment per day, including Saturday and Sunday.** I will only accept assignments more than five days after the due date under exceptional circumstances and with advance notice.

Please **keep copies of all assignments and evaluation forms.** You may be asked to resubmit work at any time, including after the end of the course.

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.

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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.

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

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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: 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>).

Plagiarism detection software (Turnitin): Turnitin will be used to screen assignments in this course. This is being done to verify that use of all materials and sources in assignments is documented. Students will be given an option if they do not want to have their assignment screened by Turnitin. In the first week of the term, details will be provided about arrangements and alternatives for the use of Turnitin in this course.