

DRAFT ERS 316: Fall 2014

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

1. ERS 316 Fall 2014: COURSE INFORMATION

- Professor: Sarah Wolfe (ES2 2011; sewolfe@uwaterloo.ca)
I cannot respond to course-related emails between 5pm - 9am.
- Seminar: Thursdays 10:30am -12:20pm in HH 227
- Office Hours: Thursdays 3:00-4:00pm in EV2 2011
- D2L Available; class announcements; resources; and all assignments submitted as e-copies to D2L
****Please note that I need all assignments in hardcopy for grading****
- Laptop policy: Please use your laptops for taking course-related notes during classtime. 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 (e.g., ERS 111). This seminar builds on elective course 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.

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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.

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. 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** 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 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 <i>Virtual Fieldtrip: Watermark</i>
Week 2 (Sept 18)	Seminar Concept(s): urban water history Readings: Yudelson Chpt 1 <i>Virtual Fieldtrip: How the earth changed history (water)</i>
Week 3 (Sept 25)	Seminar Concept(s): patterns and crises in urban water use Readings: Yudelson Chpts 2 and 3 <i>Virtual Fieldtrip: Journey on Planet Earth: Urban Explosion; Latin America: thirsty cities</i>
Week 4 (Oct 2)	Seminar Concept(s): Components of urban water and wastewater infrastructure Readings: Yudelson Chpt 4 <i>Virtual Fieldtrip: Liquid Assets, urban water management and infrastructure</i>
Week 5 (Oct 9)	Seminar Concept(s): Key concepts of residential and ICI water efficiency →TBA, City of Guelph →TBA, Region of Waterloo Readings: Yudelson Chpts 5 and 6
Week 6 (Oct 16)	In Class Test
Week 7 (Oct 23)	Seminar Concept(s): blue and grey water Readings: Yudelson Chpts 7 and 8
Week 8 (Oct 30)	Seminar Concept(s): brown and black water Readings: Yudelson Chpts 9 and 10 <i>Virtual Fieldtrip: From the River to the River (Manheim Treatment Plant); Water Systems</i>
Week 9 (Nov 6)	Fieldtrip Concepts: Industrial, Commercial and Institutional (ICI) water savings strategies and urban water treatment Field Trip (preliminary itinerary): Manheim Water Treatment Plant (water treatment) Brick Brewery (water efficiency case study)
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
Week 12 (Nov 27)	In Class Test

For the mandatory field trip – i.e., there will be related questions on the final test – departs at 10:30 and returns by 2:00 or 2:30 pm 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 me before September 18th 2014.

ASSIGNMENT DUE	VALUE	DUE DATE
Team Project Work Plan*described below	5%	September 25 th
Team Project Outline *described below	15%	October 9 th
In Class Test	25%	October 16 th
Team Final Project *described below	30%	November 13 th
In Class Test	25%	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 10:30am. Please submit a hardcopy in class on the due date for grading: look for the blue accordion folder at the front of class.

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.

If you are having difficulties with your team, it is your responsibility to resolve them as adults. If you are unable to resolve any team issues, it is the team members' responsibility to discuss these issues with me during office hours as soon as possible. All team members receive the same grade for the assignment so I need to know of problems well ahead of time.

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.

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Introduction to the Project Work Plan, Outline, and Final Report Assignments

Important: please see the case study file below for information about the competition.

Please think carefully about how you will scope your topic (i.e., no Ph.D dissertations to be written. Believe me – not fun!) and work with your course instructor during office hours and dedicated in-class time) in advance to ensure that your approach meets your 4-person team's interests but is also realistic and "doable".

Team members must jointly chose the report topic/scope and all work must be equitably allocated among all team members. **All team members will receive the same grade for each assignment.** At the university level, we anticipate students will be able to manage their time and group dynamics effectively but please alert your professor if there are intractable issues.

Assignment Components: There are four required components to complete this project contract. Please refer to the syllabus for submission deadlines.

1. **The Work Plan (5%).** This component should include:
 - One-page, single-spaced introduction that incorporates a well-articulated research statement and research rationale
 - One or two single-space, pages of detailed headings and subheading outline to structure the report, including bullet format "talking points" within each section; and,
 - A detailed allocation of tasks to different team members, deadlines and estimates of how many hours each task is expected to take to project completion. *Tip: use an Excel spreadsheet.*

2. **Report Outline (15%):**

This assignment builds on the Workplan foundation. Students should show significant progress in expanding their data collection, analysis, literature review etc.

3. **Final Report (30%):**

It should be a maximum 6-8 single-spaced pages, not including formulas, tables, figures, and the reference list. The final report should also include the biography, YouTube and team photo requirements set out by the Waterwise Schools competition (see pg. 2 of instructions).

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Important: final submission of your report is, officially, optional. I cannot, and would not, require you to submit after the semester. But you are encouraged to work at a level that is submission-worthy – if not for the purposes of ERS 316 grades but also for the opportunity to win the prize.

Support from the literature in your report: It is essential that you show that your ideas are well supported with pertinent scholarly and applied literatures. However, there is an additional requirement consistent with the expectations of a 3rd year university course: in addition to any books, papers, book chapters and web sites that you use, you are required for the final report to *make effective use of at least 10 appropriate refereed journal articles*.

Formatting Instructions: Prepare your paper according to Hay and Giles' text. Pay particular attention to the sections on organizing your paper, using the author/date citation system, and preparing the reference list. This text also explains what a "refereed journal" is, and offers some tips for conducting a literature review. In addition, please ensure that your paper is formatted as follows:

- Use a 12-point font for headings and body paragraphs. You may use an 11-point font in tables.
- Use 1-inch (2.54 cm) margins on all sides.
- Single-space all text except block quotations, text in tables, and the reference list.
- Please do not use footnotes or endnotes (either for citations, or for supplying additional material).

Evaluation rubric used to evaluate the Workplan

Students:

Indicator	Assessment
Clarity of logic and communication (7)	
Effort and investment (7)	
Reality and responsibilities (6)	
Other Notes	
	/20

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Evaluation rubric used to evaluate the Outline and Final Report

Students:

Indicator	Assessment
Clarity of logic and communication (14; 23)	<ul style="list-style-type: none"> - Research question - Analysis thoughtful/insightful/original - Writing style - Writing clarity - Argument structure and flow - Etc.
Effort and investment (14; 23)	<ul style="list-style-type: none"> - Solid and quality references beyond course materials - Reference list - Literary conventions for university assignment (in text etc) - Multiple literatures - Interdisciplinary approach - Recommendations based in reality - Etc.
Above and beyond (2; 6)	<ul style="list-style-type: none"> - Wow, best thing I've ever read! - Hey, not bad, I hadn't thought of that! - Hmm, that's interesting... - Etc.
Other Notes	<p style="text-align: right;">/30 (outline) /50 (final report)</p>

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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

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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

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

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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>).

Plagiarism detection software (Turnitin): Turnitin will not be used to screen assignments in this course. In the first week of the term, details will be provided about arrangements and alternatives for the use of Turnitin in this course.