

URBAN WATER ISSUES

Course Syllabus

Overview

Introduction

This course looks at urban water issues from an environmental management perspective. Taking an interdisciplinary approach, the course examines water as a resource and the ways in which science, policy, decision-making, ethics, and corporate approaches play out in the management of water in the urban context. Further, the course incorporates international perspectives on the major challenges implicit in providing adequate water supply and ensuring water quality to expanding urban populations while, at the same time, maintaining the integrity of natural systems. Through case studies drawn from Canada and other parts of the world, the responses and strategies of various urban areas are investigated.

Course Structure

The course is divided into 10 modules, one module per week. Additionally, there are two reading weeks, the first at the end of Week 3 and the second at the end of Week 6. There are three essential parts to each module:

1. The weekly module notes, which are an online guide to the course material to be covered that week
2. The required readings, which are referred to in the weekly module notes and provided online. It is recommended that you read these materials early in the week.
3. The weekly discussion forum, to which you are expected to contribute each week. There may be additional readings required, depending on the topic of the discussion forum. Generally, the discussion forum for a given week relates to the material covered in the module from the previous week.

Additionally, there are four written assignments (due at the end of Weeks 3, 6, 8, and 10). You will be uploading your completed assignments to the course website by the due dates.

Course Readings

There are no required hard copy textbooks; instead, we will use one electronic book available from the University of Toronto library website. For free access to these and other electronic sources, please go to the University of Toronto's library website at <http://oneseach.library.utoronto.ca/>. If you access these sources from off-campus, you will be prompted to log in with your UTORid for user verification.

Other reading material, such as academic journals and reports from various organizations will be available through electronic links on the course website. These sources are in .pdf format. You can download a version of the free Adobe Reader at: <http://get.adobe.com/reader/>. It is advisable to have all course readings completed during the week that they are assigned.

Course Description and Objectives

Water covers 70% of the planet's surface and is essential to all living forms on Earth. It has historically been considered an infinite resource by humans. Since the advent of agriculture approximately 10,000 years ago, human population numbers have been rising dramatically. With the rise of complex societies over the last 500 years and the shift of a majority of the world's population into urban settings, an understanding of urban water issues has become critical. Current consumptive lifestyles and ecosystem-altering technology have dramatically impacted on water resources. While the international community has affirmed the human right to water in a number of international treaties, declarations, and other documents, water shortages and water quality issues are on the increase in both developed and developing nations.

This course looks at urban water issues from an environmental management perspective. Course modules examine water as a resource and how science, policy, decision-making, ethics, and corporate approaches influence the management of water in the urban context. Material presented is drawn from different parts of the world to illustrate the responses of various nations, regions, and communities to the urban water challenge.

Course Objectives

This course aims to provide students with a comprehensive overview of the many different aspects of urban water resources. The ultimate goal of this course is to give the student the necessary background knowledge to evaluate urban water issues from an interdisciplinary ecosystem approach. Through course readings, discussions, and assignments, students will become familiar with important historical and current topics related to the management of urban water resources, and make comparisons between the responses of developing and developed countries.

By the end of this course, the students will:

- Understand the components of the hydrological cycle
- Be familiar with the urban water cycle
- Comprehend the benefits and limitations of governance structures and policy measures related to the challenge of urban water, including the role of privatization
- Know the environmental impacts of urban water usage and ways of mitigation
- Be aware of key organizations that study, regulate, and manage urban water in developed and developing nation settings
- Comprehend how water audits are carried out and the benefits of water audits
- Be familiar with Integrated Water Resource Management approach (IWRM)
- Understand Integrated Urban Water Management principles (IUWM)
- Understand the variability of the business response to urban water issues, including community responses to groundwater supplies, and an examination of the role of pricing, metering, and volumetric pricing

Evaluation

The grade you obtain in this course depends on your ability to think critically and write in a scholarly and concise manner for the written assignments; further, it depends on your regular participation in the weekly discussion forums and the live chats held periodically throughout the course.

The final mark is determined as follows:

- 2 Short papers (due at the end of Weeks 3 and 6, with each paper worth 15%) - 30%
- Participation in discussion forums - 30%
- Preliminary paper for final essay (Week 8) - 5%
- Final paper (Week 10) - 35%

The short papers will be 1200-1500 words in length. These papers will be based on the readings from the course, or will draw from additional articles, and will allow the student to synthesize materials in a critical and succinct manner. The final paper will be a longer research paper based on the approval of your preliminary paper on the topic. You will receive detailed instructions for both the short papers and final paper once the course has started. All written assignments are formal papers, i.e. proper academic writing style and referencing of sources is required.

This program requires that students achieve a grade of 70% (B-) or higher in order to pass the course. There is an expectation of a high level of quality in work produced by students. For evaluation purposes, student work will be graded according to the following scale:

Distance Education Certificate Program Grade Scale

Letter Grade Scale	Numerical Scale of Marks
A +	90-100%
A	85-89%
A -	80-84%
B+	77-79%
B	73-76%
B-	70-72%
FZ	0-69%

Student Obligations

Participation and Assignments

a) Participation is worth 30% of your overall course grade and will be based on regular contributions to the weekly online discussion forums. Students are expected to participate "in class" every week with a minimum participation of twice weekly in the discussion forum. The following grid will be used to evaluate the quantity and quality of your participation in the discussion forums:

Promptness and initiative	Does not respond to most postings; rarely participates freely	Responds to most postings several days after initial discussion; limited initiative	Responds to most postings within 24 hours; at times requires prompting to post	Consistently responds to postings in less than 24 hours; good self-initiative
Relevance of posts	Posted topics do not relate to discussion	Occasionally posts off topic; most posts are	Frequently posts topics related to discussion content;	Consistently posts relevant topics; cites additional

	content; short or irrelevant remarks	short and offer little insight into the topic	prompts further discussion of topic	references related to topic
Ideas and opinions of posts	Does not express opinions or ideas clearly; no connection to topic	Minimal expression of opinions and ideas; often unclear connection to topic	Opinions and ideas stated clearly; occasional lack of connection to topic	Opinions and ideas stated clearly with obvious connection to topic
Contribution to group environment	Does not make effort to participate in group environment as it develops; seems indifferent	Occasional meaningful reflections on the group discussion; marginal effort to become involved in the group	Frequently attempts to direct the discussion and presents relevant viewpoints for consideration;	Consistently attempts to direct and motivate the group discussion; presents creative approaches to topic
Grammar and spelling	Poor spelling and grammar in most posts; posts appear "hasty"	Errors in spelling and grammar in several posts	Few grammatical or spelling errors in posts	Consistently grammatically correct posts with rare misspellings

For the weekly discussion forums, the basic expectation in the course is a *minimum* of two substantive posts per week (each post being 200+ words). Posts can present your own ideas and thoughts on the weekly topic and related course material, as well as respond to the posts of others in the class. Please be aware that, as noted in the rubric above regarding promptness and initiative, *when* you make your posts is important; posts made earlier in the week count more in the grading scheme than those made at the end of the week, for the reason that the early posts represent more of a contribution to the discussion. Don't leave your posts to the last minute!

b) Students are expected to meet deadlines for written assignments. The assignments have specific due dates. If you are unable to meet one of the deadlines (for a legitimate reason such as illness), please e-mail the course instructor in advance of the deadline. If you do not notify the instructor regarding your late assignment in advance of the deadline, your paper will still be accepted, but a late penalty of 5% per day will apply. Assignments will not be accepted beyond one week past the due date, unless the student has obtained prior permission from the instructor.

c) Students are advised to check the Announcements page on the course website every few days for any new announcements posted and to also check their utoronto e-mail accounts regularly for course-related information and weekly updates sent by the course instructor.

Forum Etiquette

In discussion forums, remember to *think, discuss, and debate* from a multitude of perspectives. Both the instructor and the student will use language that is scholarly and professional.

Express yourself *clearly, accurately, and in an intellectual* rather than in a personal fashion. Discussion forums are designed for you to ask questions and gain further knowledge. Remember to reason intelligently with the instructor and other students. As the study of environmental management is a broad field and is continually evolving, please feel free to give your view or interpretation based on your own experiences.

Develop *awareness* of your own ethnocentrism and make conscious efforts to ameliorate it. Keep in mind that the course materials will come from a wide cross-section of fields of study and may use jargon that is not familiar to you. Seek to understand the subtleties of these new terms to gain a deeper understanding of the material being presented. Please ask about concepts or terms that you do not understand.

Remember, if you have a question, it is likely someone else has the same question. Also, be conscious of the language you use when you speak about race, ethnicity, and gender. And be careful to avoid any bigoted or exclusive language.

Students who express themselves *inappropriately* or attack others personally in the discussion forums will lose their marks for participation, and possibly their privilege to continue in the course. Most students are considerate and respectful of others but, once in a while, someone is abusive which can be detrimental to the experience of others.

Weekly Modules

Module 1 –Historical and Contemporary Perspectives on Urban Water

The first module takes an historical view of urban water resources and the centrality of water in the development of ancient and contemporary societies. This week, we will also briefly look at the current situation of urban water issues in North America and across the globe to begin to understand the scope and complexities of the urban water challenge.

Module 2 – The Hydrological Cycle and Urban Areas

In Module 2, we focus on the basic science of the hydrological cycle and its significance for human health and well-being and also ecosystem health. In addition, the module material will examine how urban environments typically impact on the hydrological cycle. Other topics covered include conventional and alternative water sources, as well as centralized vs. decentralized urban water systems.

Module 3 – Water Governance and Urban Water Policy

In this module, we explore the concept of water governance as the broad context for decision-making at different scales from the municipal level up to the global scale. Water policy is presented as the means or strategies to achieve water-related goals and objectives. Governance issues and challenges are examined in the Canadian and international contexts. Policy objectives regarding water management at a municipal level in Canada, including demand management, water quality and source protection, are introduced.

Module 4 – Water Demand Management

In Module 4, we review demand management as a key approach to promote water conservation and mitigate water problems in urban settings. Module material will look at various tools and strategies

available to reduce water demand, including structure, operational, economic and socio-political approaches. Pricing is examined in some depth as an effective way to achieve water-related objectives. In this module, we also look at several case studies of water demand management.

Module 5 – Water Audits and Water Management Plans

To assist water policy development, there is a need to understand where and how water is used in the urban setting. Water audits are an important element in this assessment. How, who, and why water audits are carried out will be discussed as they aid in directing policy, evaluating performance of urban water systems and, moreover, developing water management plans.

Module 6 – Integrated Approaches to Water Management – I

This module is the first of three modules which will examine integrated approaches to water resource management, representing a shift away from conventional water resources management towards more sustainable solutions. This introductory module will examine the concepts of Integrated Water Resources Management (IWRM), which is generally applied at a watershed scale, and Integrated Urban Water Management (IUWM), which refers to approaches utilized in urban settings.

Module 7 – Integrated Approaches to Water Management – II

In Module 7, we look at several case studies of IWRM at a watershed scale in Canada and other countries, which collectively illustrate the potential of these approaches as well as the complexities that affect outcomes in certain contexts. In addition, IUWM strategies such as green roofs and alternative sources of water are covered and a variety of examples are provided.

Module 8 – Integrated Approaches to Water Management – III

This third and final module on integrated approaches focus on the ethical implications, including the notion of hydrosolidarity and the empowerment of local communities in decision-making and management of water. Participation of communities and traditionally marginalized groups is examined as an important means to achieve water-related objectives. As well, the concept of environmental justice is introduced and connections made to water management issues.

Module 9 – Corporations and Urban Water

In this module, the involvement of private sector companies in sustainability initiatives, including water-related issues, is reviewed. Apart from corporate social responsibility, the various reasons why water is increasingly important to business are covered. A number of examples, such as the Water Disclosure Project, are introduced. The role of the private sector in delivery of water services in urban areas is also explored, drawing from experience in different countries around the world.

Module 10 – A View to the Future

This module concludes the course by considering the future of urban water issues. Given that urban areas continue to expand and, over the next 30 years or so, 70% of humans on the planet will be urbanized, how will future populations cope with water supply, water quality and other water-related concerns? A look at emerging trends and potential solutions will bring the course to a close.