

**Water Resources Planning
Spring 2020**

**Urb Plan 782
Frshwtr 782**

**Wednesdays, 4:00 – 6:40 pm
Great Lakes Research Facility, Room 3093
600 E Greenfield Avenue**

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Office Hours:

Wednesdays, 3:00 – 3:45 pm
GRLS (SFS) Room 3093
("Harbor View" room)

Or other times by appointment

This course is designed as an advanced introduction to water resources planning, with an emphasis on planning for surface water in urbanized watersheds and with special emphases on (1) sustainable strategies that integrate management of multiple resources (e.g., surface water and groundwater, energy and GHG emissions, air quality, etc.) and (2) communication to non-experts on water resource issues and solutions. The urban focus of this course fits well with the role of urban planners in water resource issues. Yet, understanding the watershed context, which almost always includes agricultural and natural resources lands, is also important.

Course Objectives

1. Introduce students to the methods and tools used to plan for water resources, including laws, planning methodologies, and strategies for protecting and restoring water resources.
2. Prepare students to be able to develop, communicate, and assess strategies for addressing urban water resource management issues.
3. Through a semester-long project for MMSD and Sweet Water, give students experience in preparing information products for public stakeholders related to water resource programs and policies.
4. Accommodate students with disabilities, students requiring time off for religious observances or military duty, and create a classroom environment in which all students can thrive. See policies at end of syllabus. Contact me to provide information related to accommodation or course environment.

Course Content and Requirements

All but one of the course readings are accessible through Canvas.

Natalie Macris, Planning in Plain English. On reserve or you may purchase from any bookseller.

One field trip is anticipated in early May (tentatively May 13, during final exams).

Some speakers below are tentative and have not been confirmed. Additional speakers may be added.

CLASS TOPICS and ASSIGNMENTS

Jan 22 Introductions: People, Course, and Class Project

- Introducing ourselves
- Syllabus and course requirements
- MMSD and Sweet Water project related to the Water Quality Improvement Plan (WQIP, aka “Quip”): Susan Coyle (MMSD), Pete Hill (Sweet Water), and Kristin Schoenecker (Sweet Water)

Milwaukee Metropolitan Sewerage Commission (MMSD), mmsd.com
Southeastern Wisconsin Watersheds Trust (Sweet Water), swwtwater.org

Overview Readings:

Wisconsin Land Use Megatrends, “How Healthy is Your Water?” <https://www.uwsp.edu/cnr-ap/clue/Documents/megatrends/WaterMegatrendsFINAL.pdf>

MMSD, Green Infrastructure, <https://www.mmsd.com/what-we-do/green-infrastructure>

Take a deep dive into information about green infrastructure on the MMSD page. Bring your questions to class.

Jan 29 Watershed Planning: Nine Key Element Plans; Getting Started on Public Communication

- Questions for the client team regarding the WQIP and the draft report
- Getting started: Steps in the planning process; Defining your project team’s problem

Hand out Assignment 1, Due February 12—Defining the Problem

Readings:

Draft Water Quality Improvement Plan (Sweet Water and MMSD)

U.S. EPA, Quick Guide to Developing Watershed Plans to Restore and Protect Our Waters, pp. 3-22. https://www.epa.gov/sites/production/files/2015-12/documents/watershed_mgmnt_quick_guide.pdf

“Writing a Brochure,” Academic Help, <https://academichelp.net/business-writing-help/write-brochure.html>

BC Campus, Introduction to Professional Communications, “3.4 Purpose,” <https://pressbooks.bccampus.ca/professionalcomms/chapter/3-4-purpose/>

Kathy Henning (2003) "Brevity Isn't Enough—You Need to Write Tight," Harvard Management Community Letter, February 2003, 4 pp.

MSKTC (no date) Developing Key Messages for Effective Communication, https://msktc.org/lib/docs/KT_Toolkit/Key_Message_Development_508.pdf *Continued on next page*

Sara L.C. Mackenzie (2018) "Writing for Public Health: Strategies for Teaching Writing in School or Program in Public Health," Public Health Report, 133(5): 614-18.
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6134565/>

Feb 5 Guest Speaker: TBA

Characterizing Water Resources; Land Use, Land Cover, and Water Resources

Milwaukee Riverkeeper, Milwaukee River Basin Report Card,
<https://www.milwaukeekeeper.org/2018-milwaukee-river-basin-report-card/>

Peter Flinker (2010), *The Need to Reduce Impervious Cover to Prevent Flooding and Protect Water Quality*, Rhode Island Department of Environmental Management,
<http://www.dem.ri.gov/programs/bpoladm/suswshed/pdfs/imperv.pdf> [Although about 10 years old, the scope and coverage of this document is a good fit for this course.]

Carbon+Credits for Our Urban Forests, Meeting of the Minds,
https://meetingoftheminds.org/carboncredits-for-our-city-forests-30425?omhide=true&utm_source=Meeting+of+the+Minds+Newsletter+List&utm_campaign=9911e8c1_d5-RSS_EMAIL_CAMPAIGN&utm_medium=email&utm_term=0_cdb70a5ce7-9911e8c1d5-57862593&mc_cid=9911e8c1d5&mc_eid=bd87fb40db

Indicators Used in the National Aquatic Resources Surveys, <https://www.epa.gov/national-aquatic-resource-surveys/indicators-used-national-aquatic-resource-surveys>

Collins and Larry, "Caring for Our Natural Assets: An Ecosystem Services Perspective,"
https://www.fs.fed.us/ecosystemservices/pdf/collins_larry.pdf (2007)--not much newer, but more accessible, illustrated.

International Joint Commission (2020) "Researchers, Residents Working on New Tools for Tracking Algae in Saginaw Bay," https://ijc.org/en/researchers-residents-working-new-tools-tracking-algae-saginaw-bay?utm_source=IJC+Newsletters&utm_campaign=6e63b84113-EnglishEMAIL_CAMPAIGN_Jan2020&utm_medium=email&utm_term=0_e942718880-6e63b84113-375424717&mc_cid=6e63b84113&mc_eid=5dafff3aaa

Recommended resources:

EPA, Chapter 5: [Water Quality Conditions](#). Take links to specific parameters to learn more about the parameter and the reason it is commonly measured in studies of water quality. Recommended sections include Stream Flow, Phosphorus, Total Solids, and Fecal Bacteria.

Model My Watershed Webcast, <https://www.epa.gov/watershedacademy/watershed-academy-webcast-model-my-watershed-tool-water-resource-management> [first 50 minutes is the most important. Web tool, below, has a slightly different interface, but the webcast will be helpful in doing Assignment 1.]

- US EPA, Model My Watershed website, <https://wikiwatershed.org/model/>

Feb 12 Mid-Twentieth Century Challenges in the 21st Century: Failing Sewers, Contaminated Drinking Water; Goals and Objectives of Project Team’s Communication Deliverable

DUE: Assignment 1: Project Team Problem—Audience, Purpose, Key messages, Environmental target(s)

Hand out Assignments 2 and 3:

- **Assignment 2 DUE February 19--Goals and Objectives; Alternatives** (group assignment)
- **Assignment 3 DUE February 26—Storyboard of deliverable for review in class** (individual assignment)

Sandra L. McLellan and Elizabeth P. Sauer (2009) *Greater Milwaukee Watersheds Pathogen Source Identification* Executive Summary. MMSD Contract No. M03016P02 [pdf: Canvas Home page]

Milwaukee Riverkeeper (2020) Stormwater Monitoring, <https://www.milwaukeekeeper.org/bacteria/stormwater-monitoring/>

MMSD (2020) “Laterals,” <https://www.mmsd.com/what-you-can-do/keep-your-basement-dry/laterals>

Milwaukee Journal-Sentinel (2019) “Solutions for lead hazard reduction may lie in other cities, according to panel at Zilber School of Public Health,” (Nov 19), <https://www.jsonline.com/story/news/health/2019/11/19/solutions-reduce-lead-hazards-may-lie-other-cities-panel-says/4231011002/>

Yanna Lambridinou and Marc Edwards (2016), “Opinion: Five Myths about Lead in Water,” The Washington Post, https://www.washingtonpost.com/opinions/five-myths-about-lead-in-water/2016/02/26/a3279d26-d686-11e5-9823-02b905009f99_story.html?noredirect=on&utm_term=.10ec91c60ae4, February 26, 2016.

Feb 19 A Deeper Dive into Communicating Effectively with Public Stakeholders

American Planning Association (2016) Webinar: Using Infographics to Move Audiences. <https://fhi360smc.adobeconnect.com/p3jn5mr6q24/?launcher=false&fcsContent=true&pbMode=normal>

Erin Ling (2013) Social Marketing: Changing Behavior for Improved Water Quality. https://www.chesapeakebay.net/channel_files/21459/attchmt_v.b.-presentation_cbsm-final-cbp-mb-erinling9-11-2014.pdf

Natalie Macris (2000) Planning in Plain English: Writing Tips for Urban and Environmental Planners.

DUE: Assignment 2: Goals and Objectives; Alternatives

Feb 26 Working session and team meetings

Each team will meet with Nancy at an assigned time during the class period. The specific appointment times will be announced no later than February 19.

DUE: Assignment 3 (storyboards for your deliverable) for discussion during class

Hand out Assignment 4, Due March 11—Interim project presentation

Mar 4 Wet Weather Infrastructure For Multiple Benefits: Green Infrastructure for Water Quality, Habitat, and Flood Prevention, Climate Adaptation and more

2019 students: I neglected to provide the more specific link to the "Tackling Barriers . . ." guidebook. The pdf provides more detail about the topic that Juli-Beth will be covering today. I encourage you to keep "Tackling Barriers" handy as a reference, even if you do not have the time to read it.

http://seagrant.wisc.edu/home/Portals/0/Files/Coastal%20Communities/Green_Infrastructure/GIAT.pdf

World Meteorological Association (2009) Integrated Flood Management: Concept Paper, pp. 14-20, http://www.apfm.info/publications/concept_paper_e.pdf

Kats and Glassbrook (2018) Delivering Urban Resilience. JPB Foundation. <https://www.usgbc.org/resources/delivering-urban-resilience-executive-summary>

Mar 11 Interim project presentation to client team

Group presentations to clients during class period.

DUE: Assignment 4: Team presentation of draft deliverable for client feedback

Hand out post-mortem worksheet, due March 25

Mar 18 SPRING BREAK

Mar 25 21st Century Approaches: Water Reuse; Distributed Systems for Supply, Wastewater, and Storage; Project Presentation *Post Mortem*

DUE: Individual post-mortem worksheet

Hand out Assignments 5, 6, Final Presentation, and Final Deliverable:

- Assignment 5 due April 15, draft deliverable for review and feedback
- Assignment 6 due April 29, presentation “dress rehearsal” with detailed feedback
- Final Presentations due in class May 6
- Final Deliverables due to Canvas May 13

Initiative for Global Environmental Leadership (2019), “Special Report: The End of Wasted Water—A Revolution in Reuse is Underway, <http://d1c25a6gwz7q5e.cloudfront.net/reports/2019-09-04-IGEL-Report.pdf>

Mainstreaming Potable Water Reuse in the United States: Strategies for Leveling the Playing Field (2018) https://www.epa.gov/sites/production/files/2018-04/documents/mainstreaming_potable_water_reuse_april_2018_final_for_web.pdf

Johnson Foundation (2014), “Optimizing the Structure and Scale of Urban Water Infrastructure: Integrating Distributed Systems,” *Charting New Waters*. 21 pp, excluding appendices. http://www.johnsonfdn.org/sites/default/files/cnw_catalyzingconveningreport_0.pdf

Kyra Epstein (2008) “NYC’s Living Lesson—Case Study: The Solaire,” *High Performing Buildings Magazine*, Summer 2008, <http://www.hpbmagazine.org/attachments/article/11956/08Su-The-Solaire-New-York-NY.pdf>

Apr 1 TMDLs: Role in Moving Water Quality Action

Participation Feedback will be posted for students by email or on Canvas.

Wisconsin DNR, “Impaired Waters,” <https://dnr.wi.gov/topic/impairedwaters/>

- Explore the collection of links about impairments, the consequences of listing as impaired, and delisting. Read more deeply in those you find most interesting or useful.

Wisconsin DNR, “What is a TMDL?” https://dnr.wi.gov/topic/TMDLs/documents/TMDL_flyer.pdf

Wisconsin DNR, TMDL resources page, <https://dnr.wi.gov/topic/tmdls/>

“Adaptive Management Case Study: Yahara WINs Pilot Project,” *Clean Wisconsin*, <https://www.gklaw.com/Godfrey-Kahn/Full-PDFs/CleanWisconsinYaharaWINSCaseStudyAdaptiveManagement.pdf>

Apr 8 Economic Analysis and Market Approaches

Guest lecture: Maureen McBroom, Ruekert-Mielke, green infrastructure specialist

US EPA, [Water Quality Trading Policy to Promote Market-Based Mechanisms for Improving Water Quality \(PDF\)](#)

Greenhalgh and Selman (2012) “Comparing Water Quality Trading Programs: What Lessons Are There To Learn?” *Journal of Regional Analysis and Policy* 42(2): 104-125. [pdf: Canvas Home page]

Kate Fialko (2018) Three Strengths and Weaknesses of Water Quality Trading Policies. University of North Carolina. <https://efc.web.unc.edu/2018/04/26/three-strengths-and-weaknesses-of-water-quality-trading-policies/>

Apr 15 Polishing Your Deliverable and Presenting to Client—Team Meetings

DUE: Assignment 5, draft project deliverable for review and feedback. All teams meet together

Apr 22 Reducing Barriers to Green Infrastructure Implementation

Guest Speaker: Juli-Beth Hinds (not confirmed), Green Infrastructure: Making Municipal Codes and Ordinances

Julia Noordyk (2019) “Amending Land Use Codes for Natural Infrastructure Planning,” Digital Coast, NOAA, <https://coast.noaa.gov/digitalcoast/training/port-washington.html>

http://seagrant.wisc.edu/home/Portals/0/Files/Coastal%20Communities/Green_Infrastructure/GIAT.pdf

April 29 Presentation Rehearsals

DUE: Assignment 6 in class: team presentation times to be announced by April 22.

Each group will present their final presentation for feedback. Teams will attend only during their own assigned time.

May 6 Final Project Presentations to MMSD and Sweet Water

DUE: Project Presentations

May 13 Field Trip (to be planned collaboratively)

DUE: Final Project Deliverables: submit to Canvas

Ungraded but Required

These items are not graded but all students are expected to complete them as though they were graded. Performance in both the written and oral components of these assignments will be part of the Class and Group Participation grade (explained below)

- Post-Mortem Worksheet and Class Participation during the Post Mortem
- Peer Evaluation of Team Members

Graded Work

All assignments are group work EXCEPT for Assignment 3. Every student should prepare a storyboard for February 26.

	Due	Percent of Grade
Assignment 1: Defining the Problem	Feb 12	10
Assignment 2: Goals and Objectives; Alternatives	Feb 19	10
Assignment 3: Storyboard for Deliverable (individual work)	Feb 26	15
Assignment 4: Interim project presentation to client	March 11	15
Post Mortem of Assignment 4	March 25	Participation only
Assignment 5: Draft deliverable	April 15	15
Assignment 6: Presentation “dress rehearsal”	April 29	Ungraded
Project presentations: Formal presentation to clients	May 6	15
Project deliverables: electronic files to Canvas	May 13	20

Class and Group Participation (+/-)

Participation in class discussions is critical if this course is to be successful. That means:

1. You need to prepare for class: read readings, prepare any additional work required for that period, etc.
2. **Take risks**—risk being wrong, risk being the only person with your perspective, risk asking what you think might be a “stupid question”.

Constructive participation involves:

- Contributing to the conversation but not dominating the discussion;
- Showing interest in and respect for others’ points of view;
- Connecting reading content to the ongoing discussion and to evidence, experience (personal or practice-based) or to other ideas that reinforce or contradict the main themes being discussed.

Grading participation is highly subjective (sorry). We will provide feedback on your class participation on Canvas during the week of March 18. This gives you an opportunity to adjust the level and quality of your participation.

At the end of the semester, peer evaluations of your teammates will give me insights into your collaboration and involvement in group effort and productivity. The peer evaluations will also be considered in determining the participation component of your final course grade.

Grading Participation. After letter grades are assigned, adjustments will be made to the letter grade by +/- increments based on the amount and quality of your participation. For example, a student who earns an A on written work will receive an A- if participation is unsatisfactory. Unsatisfactory means that the frequency of participation is substantially lower than other students or that participation is frequently not constructive. Serious lack of participation in class or with your team can result in more than one decrement.

Late Assignments and Mutual Accountability:

Papers are due at the beginning of the class period in which the assignment is due, even though we may not collect them until the end of class.

Because most of the assignments are group assignments, students need to be accountable to each other. If a student is unable to participate to their full capacity at some point in the semester (whether due to illness or work/family pressures), they are expected to “make it up” to their team members later in the semester.

Please notice the due dates of all papers and assignments and compare these to the due dates of assignments in other classes or anticipated workload in your job or at home. Plan your time accordingly. If a conflict of due dates or personal commitments is apparent from the syllabi, ask for an extension sooner rather than later.

If you become ill or have another unexpected life event that requires an absence or extension, please notify your team members and instructor as soon as possible.

Original Work and Plagiarism:

All work in this course should be your own. In written work, cite your sources for quotes, facts, and opinions, both in the body of your work and in the bibliography. Image sources also need to be documented. Do not copy word for word unless you place the words in quotation marks. Any plagiarism will be dealt with as a serious ethical breach. If you have questions about whether you are crossing an ethical line, ASK ME!

Other Course Policies:

This course adheres to campus policies regarding students with disabilities, religious observances, active military service, incompletes, discriminatory conduct, academic misconduct, complaints about the course, grade appeals, and firearms.

UWM Policies Regarding Courses and Instruction

1. *Students with disabilities.* Notice to these students should appear prominently in the syllabus so that special accommodations are provided in a timely manner.
<http://uwm.edu/arc/>
2. *Religious observances.* Accommodations for absences due to religious observance should be noted.
<https://apps.uwm.edu/secu-policies/storage/other/SAAP%201-2.%20Accommodation%20of%20Religious%20Beliefs.pdf>
3. Students called to active military duty. Accommodations for absences due to call-up of reserves to active military duty should be noted.
Students: <https://uwm.edu/military-veterans/>
Employees: <https://www.wisconsin.edu/ohrwd/download/policies/ops/bn9.pdf>

4. *Incompletes*. A notation of "incomplete" may be given in lieu of a final grade to a student who has carried a subject successfully until the end of a semester but who, because of illness or other unusual and substantiated cause beyond the student's control, has been unable to take or complete the final examination or to complete some limited amount of term work.
<https://apps.uwm.edu/secu-policies/storage/other/SAAP%201-13.%20Incomplete%20Grades.pdf>
5. *Discriminatory conduct*. Discriminatory conduct will not be tolerated by the University. It poisons the work and learning environment of the University and threatens the careers, educational experience, and well-being of students, faculty, and staff.
<https://apps.uwm.edu/secu-policies/storage/other/SAAP%205-1.%20Discriminatory%20Conduct%20Policy.pdf>
6. *Title IX/Sexual Violence*. Title IX is a federal law that prohibits sex discrimination in education program or activities, and UWM policy prohibits such conduct (see Discriminatory Conduct, above). This includes sexual violence, which may include sexual harassment, sexual assault, relationship violence, and/or stalking in all educational programs and education-related areas. UWM strongly encourages its students to report any instance of sex discrimination to UWM's Title IX Coordinator (titleix@uwm.edu). Whether or not a student wishes to report an incident of sexual violence, the Title IX Coordinator can connect students to resources at UWM and/or in the community including, but not limited to, victim advocacy, medical and counseling services, and/or law enforcement. For more information, please visit: <https://uwm.edu/sexual-assault/>
7. *Academic misconduct*. Cheating on exams or plagiarism are violations of the academic honor code and carry severe sanctions, including failing a course or even suspension or dismissal from the University.
<https://uwm.edu/deanofstudents/conduct/academic--misconduct>
8. *Complaint procedures*. Students may direct complaints to the head of the academic unit or department in which the complaint occurs. If the complaint allegedly violates a specific university policy, it may be directed to the head of the department or academic unit in which the complaint occurred or to the appropriate university office responsible for enforcing the policy.
<https://apps.uwm.edu/secu-policies/storage/other/SAAP%205-1.%20Discriminatory%20Conduct%20Policy.pdf>
9. *Grade appeal procedures*. A student may appeal a grade on the grounds that it is based on a capricious or arbitrary decision of the course instructor. Such an appeal shall follow the established procedures adopted by the department, college, or school in which the course resides or in the case of graduate students, the Graduate School. These procedures are available in writing from the respective department chairperson or the Academic Dean of the College/School.
<https://apps.uwm.edu/secu-policies/storage/other/SAAP%201-10.%20Grade%20Appeals%20by%20Students.pdf>
10. *LGBT+ resources*. Faculty and staff can find resources to support inclusivity of students who identify as LGBT+ in the learning environment. <http://uwm.edu/lgbtrc/>
11. *Smoke and Tobacco-Free campus*. UWM prohibits smoking and the use of tobacco on all campus property.
<https://apps.uwm.edu/secu-policies/storage/other/SAAP%2010-8.%20Smoke%20and%20Tobacco-Free%20Campus%20Policy.pdf>
12. *Final Examinations*. Information about the final exam requirement, the final exam date requirement, and make-up examinations. <https://apps.uwm.edu/secu-policies/storage/other/SAAP%201-9.%20Final%20Examinations.pdf>