

**PLANNING 453/GEOGRAPHY 453
FALL TERM 2018**

URBAN STORMWATER MANAGEMENT

COURSE: Planning/Geography 453 – Urban Stormwater Management
Lectures: T & T AL113 1:00 – 2:20 PM

INSTRUCTOR: Dr. J. Beebe
Room 103 – ENV1; ext 35490 (jbeebe@uwaterloo.ca)
Office Hours: Tues and Thurs 2:30 – 3:45 PM

TAs To be Announced first week of Classes

COURSE CONTENT AND ORGANIZATION

Stormwater management is an evolving field of study that includes aspects of environmental design, engineering, chemistry, hydrology, planning, finance and public administration. This course reviews the principles of urban stormwater management to provide a practical understanding of the development and implementation of effective management plans to mitigate environmental impacts of stormwater in urban environments.

Objectives of the course are to

- 1) understand the physical principles of urban hydrology and its relevance to stormwater quality and quantity management
- 2) consider the economic and environmental impacts of urban drainage and
- 3) review current design principles and their implementation in modern planning practices for stormwater management in urban watersheds.

TEXTBOOK

No text book is required in this course. Lectures are developed from a range of materials including textbooks, scientific papers and government documents. Some of the supplemental materials listed below as well as selected journal articles may be required reading. Each lecture will be posted on LEARN. The following supplementary materials are relevant to the course.

STUDENT EVALUATION

2 Quizzes @ 15% each	30%
3 Labs @ 10% each	30%
Final Exam	40%
Total	100%

Important Dates:

Sept 6	Lectures Begin
Oct 8	Thanksgiving
Oct 9-10	Fall Study Break
Oct 11	Quiz 1 During class time. Location to be Announced.
Nov 8	Quiz 2 During class time. Location to be Announced.
Dec 3	Last lecture in the class
Dec 6-21	University Exam Period.

There are other important dates in the University Calendar which may apply to your specific situation. It is your responsibility to ensure you are aware of these dates and act accordingly.

Lab Exercises:

There are three lab exercises that are part of your evaluation in this course. The labs are worth 10% each. They are 'paper' labs which will require you to follow instructions, complete analyses, and interpret the results.

Labs will be handed out on LEARN the week before they are due and they will be discussed in class.

IMPORTANT: I understand that students will collaborate on labs as they work through them. This is encouraged. **HOWEVER IT IS INCUMBENT THAT EACH STUDENT COMPLETE THEIR OWN LAB AND HAND IN AN INDEPENDENT COPY AT THE DUE DATE.** Any attempt to copy answers from one person to another will result in an automatic grade of 0 on the lab, and the students involved will be dealt with according to University procedures.

To ensure everyone is familiar with the terminology, please see below:

Academic Integrity: To create and promote a culture of academic integrity, the behaviour of all members of the University of Waterloo is based on honesty, trust, fairness, respect and responsibility.

Plagiarism is defined as taking "intellectual property," such as words, drawings, photos, or artwork, etc., written or created by others, and passing it off as your own. When you submit a report or assignment with your name on it, it is assumed that you are the author of everything in the assignment except for those materials that are specifically identified as coming from other sources. Therefore, if you include sentences, photos, drawings or figures from other sources in a work report or lab report, the complete reference must be cited. This applies in particular to any material cut-and-pasted from the internet or any other electronic source. Failure to cite the source completely is plagiarism, an academic infraction with serious consequences under *University of Waterloo Policy 71*.

Discipline: 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, <http://www.adm.uwaterloo.ca/infosec/Policies/policy71.html>

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, <http://www.adm.uwaterloo.ca/infosec/policies/policy70.html>

Appeals: A student may appeal the finding and/or penalty in a decision made under Policy 70 - Student Petitions and Grievances (other than regarding a petition) or Policy 71 - Student Discipline if a ground for an appeal can be established. Read Policy 72 - Student Appeals, <http://www.adm.uwaterloo.ca/infosec/Policies/policy72.html>

Cheating on Quizzes and Exams:

Cheating is defined for the purposes of this class as any attempt to gain advantage by either copying another student's paper or using any other means to read/review material, either in paper or electronic format, or somehow communicate with others during quizzes and exams. Should a student be suspected of such behavior, they will be advised at the time and will be allowed to complete the works. Their paper, and the papers of those around the student, will be tagged for assessment. Upon grading the student will be invited to discuss the event with me prior to a decision being made. Any penalties imposed will follow University guidelines.

If at any time a student feels they have concerns I would ask you to please see me immediately so these concerns may be addressed. In instances such as these please do not wait for office hours; contact me by email.

Course Materials:

Course powerpoint notes will be uploaded on Learn prior to the lecture being given. Sufficient time will be provided for the students to review the material prior to the lecture.

Note that the powerpoint files are only one part of the course materials. The discussion that accommodates the slides during the lectures represents the core component of the course and will be the material from which the quiz and exam questions will be taken.

Additional readings may also be placed on Learn for use by the students. When this occurs an announcement will be made in the lectures. It is the responsibility of the student to access Learn to ensure they are up-to-date with the course.

Success in this course can be achieved by:

1. Reviewing the powerpoint slides prior to each lecture
2. Completing the readings prior to each lecture
3. Noting any questions about the material so you can ask during lectures
4. Use office hours to clarify anything you don't understand.

Communicating with the Professor:

The best means of communication is by attending office hours. Apart from that, please use email. A voicemail can be left at my extension but please be aware that I may not be able to access voicemail daily and your call may wait.

Contact with me is required to be from your uwaterloo.ca email address. It is a University policy to have email contact between students and the University via this means. Therefore, I will not respond to emails from other domains (Hotmail, google, etc.).

Supplementary Materials References

Ontario Ministry of the Environment Stormwater Management Planning and Design Manual,
<http://www.ene.gov.on.ca/envision/gp/4329eindex.htm>

The Minnesota Stormwater Manual
<http://www.pca.state.mn.us/water/stormwater/stormwater-manual.html#manual>

Waterloo Master Drainage Study <http://www.city.waterloo.on.ca/DesktopDefault.aspx?tabID=1257>

Toronto Wet Weather Flow Master Plan – Implementation Report
http://www.toronto.ca/water/protecting_quality/wwfmmp/pdf/implementation-report-2006.pdf

ADDITIONAL REFERENCES

Stormwater Planning: A Guidebook for British Columbia
<http://www.env.gov.bc.ca/epd/epdpa/mpp/stormwater/stormwater.html>

Davis, A. and McCuen, R. (2005) *Stormwater Management for Smart Growth*. Springer.

Novotny, V (Ed) 1995 *Nonpoint pollution and urban stormwater management*. Water Quality Management Library. Technomic Publishing, Lancaster.

Seybert, T. 2006 *Stormwater management for land development- Methods and calculations for quantity control*. John Wiley and Sons.

Walesh, S. 1989 *Urban surface water management*. Wiley Interscience.