



**“HYDROLOGY AND WATERSHED MANAGEMENT”  
(EES1126, Winter 2021)**

**Professor:** David McLagan

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**Lecture Time:** Wednesdays, 2-5 pm.

**Office Hours:** Thursdays, 2-3pm (via zoom)

**Course Web Site:** Everything on Quercus (<https://q.utoronto.ca/>)

**Teaching Assistant:** Wai Ying Lam ([wy.lam@mail.utoronto.ca](mailto:wy.lam@mail.utoronto.ca))

**COURSE SUMMARY AND WEEKLY STRUCTURE**

This course provides an advanced understanding of hydrological processes occurring at the watershed scale within the broader theme of management for water resources protection. The course begins with an advanced investigation of hydrological processes occurring in watersheds, including the quantitative analysis of these processes. Aspects of water quality and land use change will be taught. This material will come together through the concept of integrated watershed management, including the linking of scientific understanding with governance, regulations, and management approaches.

This course will be a hybrid-type lecture/seminar course. Each week, Dr. McLagan will post a lecture about a specific topic on Quercus. During the specified lecture time (Wednesday 2-5pm) a live discussion on the current weeks' topic will take place. Students will lead a tutorial-type discussion of the assigned reading(s) for the week on the discussion board.

**EVALUATION**

Evaluation will be carried out in accordance with the [Graduate Grading and Evaluation Practices Policy](#) (and how that policy is interpreted and applied in this Dept.)

Participation in Weekly Journal Article Discussions	10%
Oral Presentation of Journal Article (12 mins)	15%
Term Paper on Watershed Impacts ( <b>due April 1</b> )	54%
Project proposal (14%)	
Final term paper (30%)	
Presentation (10%)	
3x 20-minute quizzes (7 % each)	21%

## READINGS

From time to time, I will refer students to the textbook “Hydrology and the Management of Watersheds, Fourth Edition” by Brooks, Folliot, and Magner (2013). This book is freely available in pdf form by chapter through the UofT Library system. Additionally, students will be assigned weekly readings that are benchmark original research papers related to course topics and I expect students to be fully prepared to discuss these papers every week (it is part of your mark to participate). All readings are listed below and will focus on lecture material from the previous week so that students have a better understanding of what they are discussing. It is possible that I may add more papers or alter this list somewhat, depending on the final number of students enrolled.

## CLASS OUTLINE / SCHEDULE (subject to minor changes; seminar readings pertain to material taught in the previous week)

DATE	CONTENT
Jan. 12 Week 1	Introduction to the course and requirements, overview of the hydrological cycle and watersheds. No seminar discussion this week. Text reading: Chapter 1 is a good primer for the entire course. Chapter 2 is covered in this lecture.
Jan. 19 Week 2	Infiltration, Recharge, and Surface Water-Groundwater Interactions Seminar Reading: Winter (2001) <i>JAWRA</i> , 37(2): 335-349. <a href="https://doi.org/10.1111/j.1752-1688.2001.tb00973.x">https://doi.org/10.1111/j.1752-1688.2001.tb00973.x</a> Wigington et al. (2013) <i>JAWRA</i> , 49(1): 163-182 <a href="https://doi.org/10.1111/jawr.12009">https://doi.org/10.1111/jawr.12009</a> Text reading: Chapters 5 and 7
Jan. 26 Week 3	Runoff Mechanisms, Streamflow, and Floods Seminar Reading: Winter (2007) <i>Journal of the American Water Resource Association</i> , 43(1): 15-25 <a href="https://doi.org/10.1111/j.1752-1688.2007.00003.x">https://doi.org/10.1111/j.1752-1688.2007.00003.x</a> Text reading: Chapter 6
Feb. 2 Week 4	Hydrograph Separation and Tracers Seminar Reading: Hirabayashi (2013) <i>Nature climate change</i> , 3(9): 816-821. <a href="https://doi.org/10.1038/nclimate1911">https://doi.org/10.1038/nclimate1911</a> Text reading: None from text really.
Feb. 9 Week 5	Soil Erosion and Sediment Transport Seminar Reading: McDonnell et al. (2010) <i>Hydrolog. Process.</i> , 24: 1745-1754 <a href="https://doi.org/10.1002/hyp.7796">https://doi.org/10.1002/hyp.7796</a> Text reading: Chapters 8 and 9 <b>Quiz 1:</b> Covers Weeks 1 - 4
Feb.16 Week 6	Water Quality Seminar Reading: Favaro and Lamoureux (2015) <i>Geomorphology</i> , 256: 359-369. <a href="http://dx.doi.org/10.1016/j.geomorph.2015.06.038">http://dx.doi.org/10.1016/j.geomorph.2015.06.038</a> Text reading: Chapter 11 Term Paper Proposal Due Feb. 18 <sup>th</sup> 2022

- Feb. 23 **Reading Week. NO CLASS!!**  
Week 7
- March 2 Riparian Areas and Wetland Hydrology  
Week 8 Seminar Reading:  
Hudon et al. (2018) *STOTEN*, 643: 1137-1151.  
<https://doi.org/10.1016/j.scitotenv.2018.06.080>  
Text reading: Chapter 13
- March 9 Urban Hydrology  
Week 9 Sweeney & Newbold (2014) *JAWRA*, 50(0): 560-584.  
<https://doi.org/10.1111/jawr.12203>  
Text reading: parts of Chapter 14  
**Quiz 2:** Covers Weeks 5 - 8
- Mar. 16 Integrated Watershed Management  
Week 10 Jarden et al (2016) *Hydrological Processes*, 31: 1536-1550  
<https://doi.org/10.1002/hyp.10736>  
Text reading: parts of Chapters 12 and 14
- March 23 Socioeconomics of Watershed Management & Alternate Perspectives  
Week 11 Seminar Reading:  
Mancilla Garcia et al (2019) *Ecology and Society*, 24(1): 28-26.  
<https://doi.org/10.1080/07900627.2016.1217503>  
Text reading: Chapter 15
- March 30 Term Paper Oral Presentations  
Week 12 Seminar Reading: Gober & Wheeler (2014) *Hydrological and Earth Systems Science*, 18: 1413-1422  
<https://doi.org/10.5194/hess-18-1413-2014>  
**Quiz 3:** Covers Week 9 – 11
- April 6 Term Paper Oral Presentations  
Week 13 Term paper due April 8<sup>th</sup> 2022.

## QUERCUS INFORMATION

### Logging in to your Quercus Course Website

Like many other courses, EES1126 uses Quercus for its course website. To access the EES1126 website, or any other Quercus-based course website, go to the UofT portal login page at <https://q.utoronto.ca/> and log in using your UTORid and password. Once you have logged in to the portal using your UTORid and password, look for the My Courses module, where you'll find the link to the EES1126 course website along with the link to all your other Quercus-based courses.

## **Activating your UTORid and Password**

If you need information on how to activate your UTORid and set your password for the first time, please go to <http://www.utorid.utoronto.ca>. Under the “First Time Users” area, click on “activate your UTORid” (if you are new to the university) or “create your UTORid” (if you are a returning student), then follow the instructions. New students who use the link to “activate your UTORid” will find reference to a “Secret Activation Key”. This was originally issued to you when you picked up your Tcard at the library. If you have lost your Secret Activation Key you can call 416-978-HELP or visit the Help Desk at the Information Commons on the ground floor of Robarts Library to be issued a new one. The course instructor will not be able to help you with this. 416-978-HELP and the Help Desk at the Information Commons can also answer any other questions you may have about your UTORid and password.

## **Email Communication with the Course Instructor**

My preference for communication with regards to all aspects of the course is via email. You can also come and discuss things during my virtual office hours and if needed we can also arrange a personal video meeting.

At times, I may decide to send out important course information by email. To that end, all UofT students are required to have a valid UofT email address. You are responsible for ensuring that your UofT email address is set up AND properly entered in the ROSI system. You can do that by using the following instructions:

To submit the information to activate your UTORid and password (see above), you will need to click the “Validate” button. Follow the instructions on the subsequent screens to receive your utoronto.ca address. Once you have your UofT email address, go to the ROSI system ([www.rosi.utoronto.ca](http://www.rosi.utoronto.ca)), log in and update the system with your new UofT email address.

## **You can check your UofT email account from**

1. The UofT home page <http://www.utoronto.ca>: From the Quick Links menu on the top right, choose “my.utoronto.ca”. Enter your UTORid and password, and when the Welcome page opens, click “WEBMAIL”.
2. Email software installed on your computer, for example Microsoft Outlook or Mozilla Thunderbird. Visit the Help Desk at the Information Commons or call 416-978-HELP for help with the set up.

Forwarding your utoronto.ca email to a Hotmail, Gmail, Yahoo or other type of email account is not advisable. In some cases, messages from utoronto.ca addresses sent to Hotmail, Gmail or Yahoo accounts are filtered as junk mail, which means that emails from your course instructor may end up in your spam or junk mail folder.

## **You are responsible for:**

1. Ensuring you have a valid UofT email address that is properly entered in the ROSI system
2. Checking your UofT email account on a regular basis as email is the primary means of professor-to-student communication outside of regular classroom hours.

## **VERIFICATION OF ILLNESS**

During the COVID-19 pandemic, the University is temporarily suspending the need for a doctor's note or a **Verification of Illness for absences** from academic participation; students should use the [Absence Declaration tool on ACORN](#) to declare an absence if they require consideration for missed academic work; students are responsible for contacting instructors to request the academic consideration they are seeking; students should record each day of their absence as soon as it begins, up until the day before they return to classes or other academic activities.

## EMERGENCY PLANNING

Students are advised to consult the university's preparedness site (<http://www.preparedness.utoronto.ca>) for information and regular updates regarding procedures relating to emergency planning.

## ACCESSIBILITY NEEDS

The University of Toronto is committed to accessibility. If you require accommodations for a disability or have any accessibility concerns about the course, the classroom or course materials, please contact the [UTSC AccessAbility Services](#) as soon as possible.

We also suggest you also refer to the following University of Toronto Scarborough Library link:

<http://utsc.library.utoronto.ca/services-persons-disabilities>

## PLAGIARISM

University of Toronto Code of Behaviour on Academic Matters states that "it shall be an offence for a student knowingly: to represent as one's own any idea or expression of an idea or work of another in any academic examination or term test or in connection with any other form of academic work, i.e., to commit plagiarism."

The [University of Toronto's Code of Behaviour on Academic Matters](#) outlines the behaviours that constitute academic dishonesty and the processes for addressing academic offences.

For accepted methods of standard documentation formats, including electronic citation of internet sources please see [the UofT writing website](#).

Normally, students will be required to submit their course essays to Ouriginal for a review of textual similarity and detection of possible plagiarism. In doing so, students will allow their essays to be included as source documents in the Ouriginal reference database, where they will be used solely for the purpose of detecting plagiarism. The terms that apply to the University's use of the Turnitin.com service are described on the Turnitin.com web site

## WRITING AND ENGLISH LANGUAGE

As well as the faculty writing support, please see [English Language and writing support at University of Toronto](#) or the [Centre for Teaching and Learning](#) at UTSC.

The following is also useful:

Sylvan Barnett, *A Short Guide to Writing About Art*. 5-7th edition (New York: Harper-Collins, 1997)

William Strunk Jr., E.B. White. *The Elements of Style* (New York: MacMillan Publishing)

**LATE WORK**

If you require an extension for any work, please contact Prof. McLagan as soon as possible.

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