LWS 515/ SOIL 515 – WATERSHED SCIENCE

TERM 1 – SEPTEMBER – DECEMBER 2024

ACKNOWLEDGEMENT

UBC's Point Grey Campus is located on the traditional, ancestral, and unceded territory of the xwməθkwəy̓əm (Musqueam) people. The land it is situated on has always been a place of learning for the Musqueam people, who for millennia have passed on their culture, history, and traditions from one generation to the next on this site.

COURSE INFORMATION

Course Title	Course Code Number	Credit Value
Watershed Science	LWS 515 / SOIL 515	3

PREREQUISITES

None

CONTACTS

Course Details		Contact Details	Office Hours
Instructor Lewis Fausak	Office: MCML 112A	lewis.fausak@ubc.ca	During class time or as needed - TBA (Thursdays 4:30-5:30)

COURSE INSTRUCTOR BIOGRAPHICAL STATEMENT

I am a Sessional Lecturer in the Faculty of Land and Food Systems at the UBC Vancouver Campus. I am also the full-time Applied Biology Education and Research Technician in the Land and Food Systems Faculty. In this role, I work with faculty and students in labs and with experiments, complete research, and provide safety training and support for the faculty. My research interests include agricultural water use and soil science. You can find out more about my research on Google Scholar and on Twitter/X @lewisfausak.

WHY STUDY WATERSHED SCIENCE?

Watersheds are effective integrators of environmental processes – combining inherent conditions, the cumulative impacts of land use, and water management to determine the water flow and quality conditions upon which humans and ecosystems depend. This course presents a comprehensive overview of watershed science and the principles of integrated watershed science.

COURSE STRUCTURE - BLENDED

Year/Term: Winter 2024-2025, Term 1

Course Schedule:

Tuesdays 4:30 - 6:30 p.m. Vancouver time (LSK 462)

Thursdays 4:30 – 5:30 p.m. Vancouver time (LSK 462 OR online via Zoom)

Class location:

Tuesday: LSK 462, Leonard S. Klinck

Thursday: LSK 462, Leonard S. Klinck OR online via Zoom TBD by the instructor

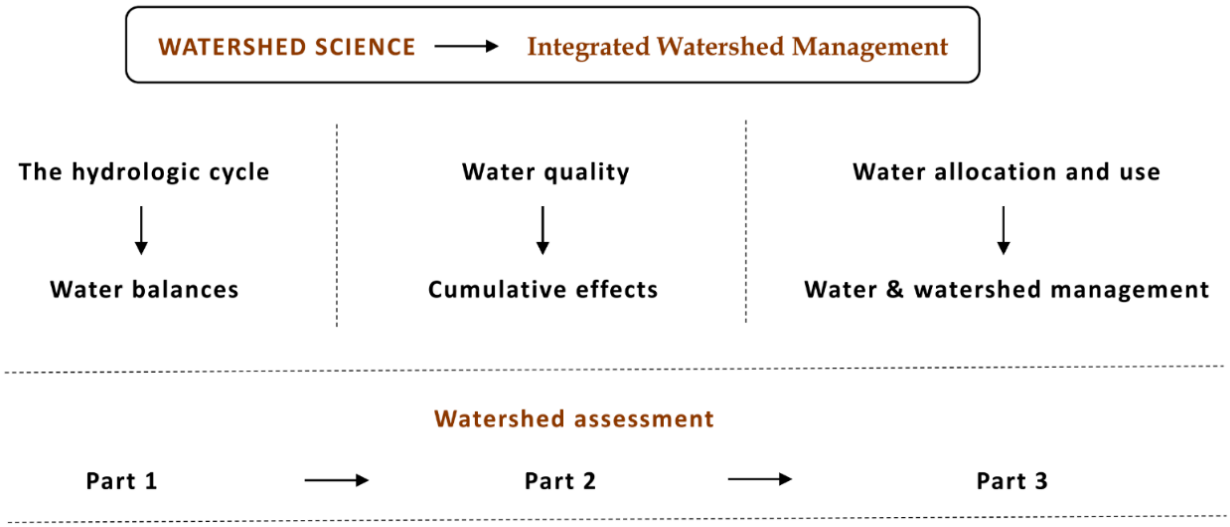
This course will be taught using a modular format. We will focus on six core areas: the hydrologic cycle, water balances, water quality, land-water interactions, cumulative effects, and water and watershed management (see the course map below).

Tuesday tutorial is mandatory – this will be our live classes; and will include a mix of short presentations, break-out groups, and discussion sessions covering core theory and its application.

Materials to review prior to class will be organized by module and provided in Canvas following the course schedule. The blended approach implies you will need to undertake self-directed learning; this includes individual assignments and asynchronous group activities throughout the term.

Thursday Guest Lecture / Virtual office hours – Students are required to attend guest lectures, however, scheduled office hours are optional. All students can drop-in to office hours with questions, but primarily this time is allocated for students who were not able to attend Tuesday's in-person class. Please note that office hours are not a substitute for class, but a mechanism we can use to accommodate students needing to miss an occasional class due to illness or other extenuating circumstances during term.

COURSE MAP



LEARNING OUTCOMES

Upon completion of LWS/SOIL 515, actively engaged students will be able to:

1. Characterize the components of watersheds
2. Describe the framework of watershed-based evaluations
3. Investigate links between land use activities, their interactions and impacts on water resources
4. Discuss approaches to deal with complexity, integration and cumulative effects
5. Articulate the importance of community-based approaches to watershed management
6. Undertake a watershed assessment
7. Develop potential management options to address societal challenges around water resources in a watershed context

The course is not intended to cover all aspects of hydrology, water chemistry or aquatic health but will provide an overview of each topic and illustrate the major interrelationships between them and land use activities. At the end of the course, you will have an understanding of the consequences of the main human activities on water resources, be able to examine the health of a watershed, diagnose potential causes, and make suggestions of options and policies on how to improve the watershed system.

LEARNING ACTIVITIES

SCHEDULE	TOPIC	DATE	DUE DATES
Sept 2-6	Introduction – water and watersheds	Sept 3	
Sept 9-13	1.Hydrologic cycle	Sept 10	Review paper 1 – Sept 9 Honesty pledge – Sept 9

Sept 16-20	2. Water balance	Sept 17	Review paper 2 – Sept 16 Select your watershed – Sept 16
Sept 23-27	Working Session	Sept 24	
	Guest Lecture	Sept 26	
Sept 30-Oct 4	Working Session	Oct 1	Watershed Assessment report I – Oct 4
Oct 7-11	3. Water quality	Oct 8	Review paper 3 -Oct 7
Oct 14-18	4. Cumilative effects	Oct 15	Review paper 4 – Oct 14
	Guest lecture	Oct 17	
Oct 21-25	Working session	Oct 22	
Oct 28-Nov 1	Guest Lecture	Oct 31	Watershed Assessment report II – Nov 3
Nov 4-8	5. Water allocation and use	Nov 5	Review paper 5 – Nov 4
	Guest lecture	Nov 7	
Nov 11-15	No Classes – midterm break		
Nov 18-22	6. Water and watershed management	Nov 19	Review paper 6 – Nov 18
	Guest lecture	Nov 21	
Nov 25-29	Working session – final reports	Nov 26	
Dec 2-6	Review; Final presentations – watershed projects	Dec 3	Watershed assessment report III – Dec 2 Student presentations- Dec 3

LEARNING MATERIALS

Teaching Technology:

The UBC *Canvas* learning management system will be used throughout the course for course communication, assignment submission, grading etc. Please see here for a student guide to using Canvas and for Canvas related technical support.

Zoom may be used for office hours. Links will be posted in Canvas.

Please do not email the instructor for technical support issues. We cannot solve these issues and this will only further delay your efforts. Please DO let us know if something is missing or not working properly on the Canvas course site – this may be something we can fix and will help us resolve the issue for all class members.

Readings:

Readings are organized by module and posted in Canvas. Suggested readings for review papers are provided to help you get started on your assignments, but as a graduate student, you are expected to independently review additional, relevant literature.

LEARNING ACTIVITIES AND ASSESSMENTS OF LEARNING

Assignments	Weight	Associated Learning Outcomes
Review papers (n=6)	45%	1,4,5
Watershed assessment reports (n=3)	45%	2,3,6,7
Participation - discussions + final presentation	10%	1, 3, 5

Assignments:

Review papers: There are 6 short (500 word) review papers focused key topics covered in the course. These thematic short papers draw from both the course readings and external literature sources. Due dates will be posted in Canvas. Topics include hydrology, water balance, water quality, land-water interactions, cumulative effects and water management.

Watershed Reports: There are 3 reports in this course that combined cover the major components of a watershed assessment and an initial assessment of potential management options. These reports are project-oriented, building on concepts covered in the course readings and tutorial sessions. Due dates and details will be posted in Canvas.

Submission of assignments*: All* assignments are to be submitted online in Canvas in Word (doc or docx), pdf or pptx formats only. If your file does not open, I will consider the assignment as not submitted.

Late assignments: Assignments must be uploaded to Canvas prior to the due date. Review papers will be discussed in-class, therefore no late assignments will be accepted. Watershed reports submitted beyond the due date will be subject to a -10% per day (including weekend days) late penalty, a maximum of 4 days.

If you are having trouble meeting an assignment deadline, please let me know as soon as possible; I can work with you and your grad advising office to come up with a plan to fulfill course requirements should you have documented medical or other extenuating circumstances.

Retention of assignments: Students should retain a copy of all submitted assignments (in case of loss).
Exams: There are no exams in this course.
Participation: Will be based on peer-to-peer discussion sessions during tutorials and lectures, group and individual presentations, including presentation of your final watershed assessment (as per the course

schedule).
Grading guidelines: see https://vancouver.calendar.ubc.ca/campus-wide-policies-and-regulations/grading-practices/introduction

Percentage (%)	Letter Grade	Percentage (%)	Letter Grade
90-100	A+	85-89	A
80-84	A-	76-79	B+
72-75	B	68-71	B-
64-67	C+	60-63	C
0-59	F (Fail)		

UNIVERSITY POLICIES

UBC provides resources to support student learning and to maintain healthy lifestyles but recognizes that sometimes crises arise and so there are additional resources to access including those for survivors of sexual violence. UBC values respect for the person and ideas of all members of the academic community. Harassment and discrimination are not tolerated nor is suppression of academic freedom. UBC provides appropriate accommodation for students with disabilities and for religious observances. UBC values academic honesty and students are expected to acknowledge the ideas generated by others and to uphold the highest academic standards in all of their actions.

Details of the policies and how to access support are available on **the UBC Senate website.**

OTHER COURSE POLICIES

Academic Integrity:

Academic honesty is a core value of scholarship; all students are expected to know, understand and follow the codes of conduct regarding academic integrity. At the most basic level, this means submitting only original work done by you, and acknowledging all sources of information or ideas and attributing them to others as required. This also means you should not cheat, copy, present the work of others as your own, or self-plagiarize. Violations of academic integrity (i.e., misconduct) are taken very seriously at UBC, and harsh sanctions are imposed. Incidences of plagiarism or cheating may result in a mark of zero on an assignment, and more serious consequences may apply when the matter is referred to the Office of the Dean. Careful records are kept in order to monitor and prevent recurrences. A more detailed description of academic integrity, including the University's policies and procedures, may be found in the UBC Calendar: Student Conduct and Discipline. Please speak with me if you are unsure about these policies so that I can clarify them for you.

Early Alert:

During the term, I will do my best to reach out and offer support if I am concerned about your academic performance or well-being. I also encourage you to come and speak with me, or with student services, if you need assistance. In addition, I may identify my concerns using Early Alert. The program is confidential and provides you with connections to resources such as academic advising, financial

advising, counselling, or other resources and support to help you get back on track. For more information, please visit earlyalert.ubc.ca.

Academic Concession:

For the first occurrence of an acute illness (cold, flu or other) or compassionate grounds, a *self-declaration* will suffice. To request academic concession, please email me prior to the due date. A doctor's note is NOT required for this request. If you have an ongoing issue including: conflicting responsibilities, medical circumstance, or compassionate ground (e.g. death in the family) please contact your Faculty's advising office for guidance.

Once academic concession is granted, the weight of the missed assignment will be redistributed to the other course items of the same type.

*If you or one of your family members has the **COVID-19** virus, please contact Student Services immediately, so that we can explore concessions (if needed) that will not impact your grades negatively.*

Assignment regrades / course standing:

If you notice a potential grading error on an assignment, please notify me (email or Canvas mail) as soon as possible.

To request a review of your final standing you must apply for a Review of Assigned Standing. Information on this process is found in the UBC Calendar.

LEARNING ANALYTICS

Learning analytics includes the collection and analysis of data about learners to improve teaching and learning. This course will be using the following learning technologies: Canvas, Zoom, django. Many of these tools capture data about your activity and provide information that can be used to improve the quality of teaching and learning. In this course, I plan to use analytics data to:

- View overall class progress
- Track your progress in order to provide you with personalized feedback
- Review statistics on course content being accessed to support improvements in the course
- Assess your participation in the course

COPYRIGHT

All materials of this course (course handouts, lecture slides, assessments, course readings, etc.) are the intellectual property of the Course Instructor or licensed to be used in this course by the copyright owner. Redistribution of these materials by any means without the permission of the copyright holder(s) constitutes a breach of copyright and may lead to academic discipline.

I do not permit students to record my classes without prior approval.

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