

ENVS 3305 – Soil Hydrology**Fall 2020**

Location: B206, Mount Royal University, 4825 Mt Royal Gate SW, Calgary, AB T3E 6K6
 Pre-requisites: GEOG 2109 – Ecological Land Classification and Soil
 Lectures: 3.0 hours per week
 Tutorial: Maximum 3.0 hours per week. Tutorial starts on September 16 (tentative).
 Instructor: Jian(Jay) Huang, Ph.D, P.Eng.
 Office Hours: TBD
 Recommended Textbook: Introduction to Hydrology (4th or 5th edition) by Warren Viessman Jr. and Gary L. Lewis, Prentice Hall Press.
 Tutorial sheets: will be uploaded prior to each tutorial.
 Lecture notes: will be provided prior to the first lecture.
 Other reference materials will be uploaded to Blackboard in pdf.

Calendar Description

Introduction to soil hydrology; Meteorological factors; Physical hydrology including measurement and estimates of precipitation inputs, losses, and rainfall-runoff relations; Flow measurement; Hydrograph analysis including baseflow separation; Water balance; Statistical hydrology, probability distributions and frequency analysis; Water-soil interaction; Infiltration models and methods; Water quality data analysis.

Assignments of Marks:

Mid-Term Test (Around the 7 th week of classes, TBD)	30%
Project 1 (Frequency Analysis)	10%
Project 2 (ArcGIS)	10%
Final Exam	50%

Total	100%

University-Wide Learning Aims

The Mount Royal University Academic Plan 2012-2017 identified four aims that an undergraduate education at Mount Royal University should achieve: Intellectual and Practical Skills, Integrative and Applied Learning, Knowledge of Human Cultures and the Physical, Natural and Technological World and, Personal and Social Responsibility. These four aims were designed to inform the development of program learning outcomes across the university.

This course will emphasize the following skills:

Intellectual and Practical Skills:

This learning aims is achieved through designing effective sampling programs and evaluate the data in light of the impact to society and the environment. Practical skills include optimizing the proper functioning of instrumental sampling and measuring

devices, developing standard operating procedures, laboratory analyses and trouble shooting.

Communication Skills:

This learning outcome is addressed through communicating with stakeholders, writing labs and project reports.

Information Access and Retrieval Skills:

This learning outcome is fulfilled through retrieving information to facilitate data interpretation and evaluation, reference the sources of information, and as required, synthesizing the information.

Group Effectiveness Skills:

This learning outcome is achieved through working in team in performing lab exercises and field sampling.

Computer Literacy Skills:

This learning outcome is achieved by doing computer modeling and simulation for better understanding soil hydrologic regime quantitatively and qualitatively.

Ethical Reasoning Skills:

This learning outcome is achieved through recognizing the impact of industrial, and agricultural activities on watershed systems and the need to protect and manage these systems in a sustainable way.

Course Learning Outcomes

Upon completion of the course, students should have:

- Develop statistical tools to predict flows of a certain return period;
- The knowledge to perform precipitation-runoff modeling;
- Learn the terminology of hydrology and the methods used in monitoring and collecting hydrological data;
- An understanding of factors of water balance in a hydrologic system;
- Learn the principle of water-soil interaction using available tools and models to analyze and predict infiltration;
- Apply the knowledge of hydrology to analyze a specific system (forest, wetland and urban areas);

Course and Tutorial Schedule

Week	Topic
1	Introduction to soil hydrology
2-3	Statistical hydrology
4	Stream flow and runoff processes
5-6	Precipitation-rainfall
7-8	They hydrologic cycle
9-10	Infiltration; Water quality
11	Rainfall-runoff analysis, flow routing
12	Application: specific system analysis (ArcGIS)
13	Summary

Grading System

95-100	A+	4.00	Excellent
85-94	A	4.00	Excellent
80-84	A-	3.70	Excellent
77-79	B+	3.30	Good
73-76	B	3.00	Good
70-72	B-	2.70	Good
67-69	C+	2.30	Satisfactory
63-66	C	2.00	Satisfactory
60-62	C-	1.70	Satisfactory
55-59	D+	1.30	Poor
50-54	D	1.00	Poor
< 50	F	0.00	Fail

Course Policies

Students are required to attend lectures and tutorials except in the case of medical or other valid issues.

Special Needs Students/Learning Skills Center

Peer tutor program and workshops on study skills are available at the Learning Skills Center as well as additional services for students with special needs.

Academic Regulations

Students must familiarize themselves with regulations and policies in the University Calendar with special emphasis being given to sections on Academic regulations and Academic Status.

The Code of Student Conduct can be found at www.mtroyal.ca/codeofstudentconduct.

Important Dates

- Holidays/cut-off dates for withdrawal etc.
- Midterm & Final Exam.