



**Oregon State  
University**

**Course Name:** Physical Hydrology

**Course Number:** BEE 512

**Course Prerequisites:** 1 year of calculus and physics.

**Credits:** 3

**Instructor name:** Stephen Good

**Instructor email:** stephen.good@oregonstate.edu

**Instructor phone:** (541) 737-2118

### **Course Description**

This course provides a quantitative description of fundamental hydrologic processes and their coupling to the energy and carbon cycles. Interactions of between water and the atmosphere, soils, and plants are discussed and models representing key processes governing the movement of water in the environment are introduced. PREREQUISITES: 1 year of calculus and physics.

### **Learning Resources**

*Physical hydrology 3<sup>rd</sup> Edition*, S. Lawrence Dingman, note that this text is available in both hard cover and as an electronic text (at a much lower price).

**Note to prospective students:** Please check with the OSU Bookstore for up-to-date information for the term you enroll ([OSU Bookstore Website](#) or 800-595-0357). If you purchase course materials from other sources, be very careful to obtain the correct ISBN.

### **Course Content**

This course combines approximately 90 hours of instruction, activities, and assignments for 3 credits.

### **Canvas**

All (section 400) or part (section 001) of this courses content will be delivered via Canvas. On Canvas you will interact with your classmates and with your instructor. Within the course Canvas site you will access the learning materials, such as the syllabus, class discussions, assignments, and quizzes

## Measurable Student Learning Outcomes

LO1: Demonstrate knowledge of how hydrology is determined by physical processes.

LO2: Discuss the physical mechanisms that shape water availability at local, regional, and global scales.

LO3: Apply hydrologic principles to quantify the movement and distribution of water.

## Course Content By Module

	Topic	Reading Material	Learning Activities <i>Quizzes cover text in parentheses (inclusive)</i>
1	Global hydrology	Chapters 1-3	Quiz 1 (1.3-1.5, 2.0-2.1.3 & 3.1-3.3) Assignment 1 (global energy & water cycles) Discussion 1
2	Hydrometeorology	Chapter 4	Quiz 2 (4.1-4.2) Assignment 2 (coast range precipitation rainout) Discussion 2
3	Snow hydrology & local energy balance	Chapter 5	Quiz 3 (5.1-5.5) Assignment 3 (Cascade snowpack predictions) Discussion 3
4	Evapotranspiration	Chapter 6	Quiz 4 (6.1-6.3) Assignment 4 (Evaporation in a forest) Discussion 4
5	Soil water storage & flow	Chapter 7	Quiz 5 (7.0-7.2) Assignment 5 (water potential along the SPAC) Discussion 5
6	Infiltration	Chapter 8	Quiz 6 (8.1-8.3) Assignment 6 (infiltration with Green and Ampt) Discussion 6
7	Groundwater	Chapter 9	Quiz 7 (9.0-9.4) Assignment 7 (spring residence times) Discussion 7
8	Runoff generation	Chapter 10	Quiz 8 (10.1-10.4, 10.6) Assignment 8 (hydrograph analysis) Discussion 8
9	Streamflow	Chapter 10	Quiz 9 (10.5) Assignment 9 (none – Thanksgiving week) Discussion 9
10	Hydrologic modeling & Evaluation	Appendix F	Quiz 10 (1.11, F) Assignment 10 (Integrated hydrologic modeling) Discussion 10

## Evaluation of Student Performance

Students will be assessed through weekly quizzes (20%), weekly assignments (60%), and weekly discussions (20%). Each weekly online quiz will be due on Monday at 11:59PM Oregon time and will consist of 10 questions. Each weekly assignment will be due on the following Monday at 11:59PM Oregon time. The lowest quiz, assignment, and discussion score of the quarter will be dropped. 50% of the deducted points on quizzes and reports can be recovered by submission of revisions to before the next quiz/report is due. There is no assignment or discussion during week 9, and week 10 counts double.

Grades will be assigned as follows:

Percentage	Grade	Percentage	Grade
93 - 100	A	73 – 77	C
90 – 93	A -	70 – 73	C-
87 – 90	B+	67 – 70	D+
83 – 87	B	63 – 67	D
80 – 83	B-	60 – 63	D-
77 – 80	C+	0 – 60	F

### **Discussion Participation & Course Communication**

Students are expected to participate in all discussions. While there is great flexibility within the course, this is not a self-paced and students are expected to maintain progress with the class. Please post all course-related questions in the discussion forums so that the whole class may benefit. Please email the instructor for matters of a personal nature. The instructor will try to reply to course-related questions and email within 24-48 hours when possible as well as return feedback on course learning assessments within a week of their submission.

### **Incompletes & Late Submissions**

Incomplete (I) grades will be granted only in emergency cases (usually only for a death in the family, major illness or injury, or birth of your child), and if the student has turned in 80% of the points possible. If you are having any difficulty that might prevent you completing the coursework, please don't wait until the end of the term; let me know right away. Required work submitted late will be penalized 10% per day overdue, up to a maximum of 30%.

### **Guidelines for a Productive and Effective Campus and Online Classroom**

Students are expected to conduct themselves in the course (e.g., on discussion boards, email) in compliance with the university's regulations regarding civility.

Civility is an essential ingredient for academic discourse. All communications for this course should be conducted constructively, civilly, and respectfully. Differences in beliefs, opinions, and approaches are to be expected. In all you say and do for this course, be professional. Please bring any communications you believe to be in violation of this class policy to the attention of your instructor.

Active interaction with peers and your instructor is essential to success in this online course, paying particular attention to the following:

- Unless indicated otherwise, please complete the readings and view other instructional materials for each week before participating in the discussion.
- Read your posts carefully before submitting them.
- Be respectful of others and their opinions, valuing diversity in backgrounds, abilities, and experiences.
- Challenging the ideas held by others is an integral aspect of critical thinking and the academic process. Please word your responses carefully, and recognize that others are expected to challenge your ideas. A positive atmosphere of healthy debate is encouraged.

### **Technical Assistance**

If you experience computer difficulties, need help downloading a browser or plug-in, assistance logging into the course, or if you experience any errors or problems while in your online course, contact the OSU Help Desk for assistance. You can call (541) 737-3474, email [osuhelpdesk@oregonstate.edu](mailto:osuhelpdesk@oregonstate.edu) or visit the [OSU Computer Helpdesk](#) online.

### **Accessibility of Course Materials**

All materials used in this course are accessible. If you require accommodations please contact [Disability Access Services \(DAS\)](#). Additionally, Canvas, the learning management system through which this course is offered, provides a [vendor statement](#) certifying how the platform is accessible to students with disabilities.

### **Statement Regarding Students with Disabilities**

Accommodations for students with disabilities are determined and approved by Disability Access Services (DAS). If you, as a student, believe you are eligible for accommodations but have not obtained approval

please contact DAS immediately at 541-737-4098 or at <http://ds.oregonstate.edu>. DAS notifies students and faculty members of approved academic accommodations and coordinates implementation of those accommodations. While not required, students and faculty members are encouraged to discuss details of the implementation of individual accommodations.

### **Expectations for Student Conduct**

Student conduct is governed by the university's policies, as outlined in the OSU student code of conduct: <http://studentlife.oregonstate.edu/code>

### **Reach Out for Success:**

University students encounter setbacks from time to time. If you encounter difficulties and need assistance, it's important to reach out. Consider discussing the situation with an instructor or academic advisor. Learn about resources that assist with wellness and academic success at [oregonstate.edu/ReachOut](http://oregonstate.edu/ReachOut). If you are in immediate crisis, please contact the Crisis Text Line by texting OREGON to 741-741 or call the National Suicide Prevention Lifeline at 1-800-273-TALK (8255)

### **OSU Student Evaluation of Teaching**

The online Student Evaluation of Teaching system opens to students the Wednesday of week 8 and closes the Sunday before Finals Week. Students will receive notification, instructions and the link through their ONID. They may also log into the system via Online Services. Course evaluation results are extremely important and used to help improve courses and the learning experience of future students. Responses are anonymous (unless a student chooses to "sign" their comments agreeing to relinquish anonymity) and unavailable to instructors until after grades have been posted. The results of scaled questions and signed comments go to both the instructor and their unit head/supervisor. Anonymous (unsigned) comments go to the instructor only.