Course Syllabus

Jump to Today

FISH/ESRM 447: Watershed Ecology & Management

Course Description

This course is an investigation of stream and river ecosystems from a watershed perspective. We will take a deep dive to understand the processes that structure functioning river ecosystems. Multiple theoretical concepts will be evaluated and used to underpin our examination. Specific topics will include river/stream hydrology, geomorphology, biogeochemical cycles, food webs, and global change. While the course is structured around learning the dominant physical, chemical, and biological processes in rivers, we will also explore human interactions with rivers continually throughout the course and discuss approaches to river management based on ecological principles.
The lab section provides hands-on laboratory and field experience in standard methods of stream and river ecology. Activities as part of the lab will range from data analysis and spreadsheet-based calculations to identifications of local taxa to field observations and the use of standard instrumentation.

**Meeting Times**

Lecture will be held Tuesday and Thursday 10:00a-11:20a in LOW 201 (Note that we are trying to change to a larger and better room).

Labs for section AA will be Tuesday 1:30p to 2:50p in OTB 206

Labs for section AB will be Thursday 1:30p to 2:50p in OTB 206

Students will need to bring a laptop computer with them to lab. Please see the Computing Resources section below for more details. Also see the Field Trip Schedule below for extended meeting times and additional lab days.

**Instructor**

Gordon Holtgrieve, Associate Professor, Aquatic and Fishery Sciences

Email: gholt@uw.edu

Office: FSH 316B

Office hours: Wednesdays 1:30p - 3p (except 1st and 6th weeks)

**Teaching Assistants**

Grace Henry, graduate student, Aquatic and Fishery Sciences

Email: henryn98@uw.edu

Office: FSH 260B

Office hours: TBD

Sabikunnahar Shorna (goes by Shorna), graduate student, Aquatic and Fishery Sciences

Email: shorna@uw.edu

Office: FSH 260B

Office hours: TBD

**Learning Objectives**

Students will develop a broad understanding of the ecology of streams/rivers and their catchments at local to global scales, with a particular emphasis on the Pacific Northwest. Specifically, at the end of this course students will be able to:

1. Demonstrate through short answer and multiple choice testing a comprehensive understanding of the basic physical, chemical, and biological processes that control the structure and function of
healthy riverine ecosystems. Primary source of information will be in-class lecture and discussions, supplemented with additional readings.

2. Identify, contrast, and synthesize competing scientific views of watershed ecosystem theory in writing based on reading of assigned primary literature supplemented with small group discussions.

3. Produce a written, in-depth analysis that synthesizes, differentiates, and critiques the current state of science for a specific scientific topic within watershed ecology based on well researched and cited primary literature.

4. Apply concepts from this course to case studies to evaluate current watershed management practices in achieving stated goals for conservation and human uses. Evaluation will be through short essay exercises.

5. Gain skills in data analysis and ecosystem modeling through in-lab problems sets and spreadsheet exercises.

6. Identify, describe, and relate the major physical, chemical, and biological processes that structure lotic ecosystems in the field in a group setting through oral presentations.

7. Demonstrate proficiency in a set of standard field methods for characterizing the physical, chemical, biological, and ecosystem conditions of small to medium size streams and rivers. Proficiency will be assessed through direct data collection and/or analysis resulting in the production of a field report.

8. Identify key taxa present in Pacific Northwest streams/rivers and riparian areas and describe their functional role in the ecosystem. Proficiency will be assessed through in-lab worksheets and problem sets.

**Required Reading**

Course handouts, lectures, and the primary literature will be the dominant source of information. There is no required textbook but students may find it useful to look at a copy of “River Ecology and Management: Lessons from the Pacific Coastal Ecoregion” 1998 edited by Naiman and Bilby.

You can find a set of suggested readings here (Files -> Readings). These are not required but for you to use as additional reference as needed.

**Evaluation & Grading**

Five (5) graded credits based on the following scheme:

<table>
<thead>
<tr>
<th>Assignment</th>
<th>Percent of final grade</th>
<th>Due Date(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lab Assignments &amp; Field Trips</td>
<td>50</td>
<td>Weekly</td>
</tr>
<tr>
<td>Midterm Exam</td>
<td>20</td>
<td>First week of May (in class)</td>
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### Lecture Schedule (tentative)

<table>
<thead>
<tr>
<th>Week</th>
<th>Tuesday</th>
<th>Thursday</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>28 Mar: Introduction, Course Logistics, Watershed Classification</td>
<td>30 Mar: Basin Hydrology</td>
</tr>
<tr>
<td>2</td>
<td>4 Apr: Geomorphology</td>
<td>6 Apr: Geomorphology, con't</td>
</tr>
<tr>
<td>3</td>
<td>11 Apr: Hyporheic Zones &amp; Riparian Areas</td>
<td>13 Apr: Biogeochemical Cycles Overview</td>
</tr>
<tr>
<td>4</td>
<td>18 Apr: Nitrogen Cycling (maybe also Phosphorus)</td>
<td>20 Apr: Nutrient Spiraling</td>
</tr>
<tr>
<td>5</td>
<td>25 Apr: Carbon &amp; Primary Productivity</td>
<td>27 Apr: Ecosystem Metabolism</td>
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<tr>
<td></td>
<td>2 May: Midterm Exam</td>
<td>4 May: Complexity within river basins for sustaining fisheries and wildlife</td>
</tr>
<tr>
<td>7</td>
<td>9 May: Ecological Theories -- RCC</td>
<td>11 May: Ecological Theories -- SDC, FPC</td>
</tr>
<tr>
<td>8</td>
<td>16 May: Lower Trophic Levels / Bugs</td>
<td>18 May: Upper Trophic Levels / Fish</td>
</tr>
<tr>
<td>9</td>
<td>23 May: Riverine Communities</td>
<td>25 May:</td>
</tr>
<tr>
<td>10</td>
<td>30 May:</td>
<td>1 Jun:</td>
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</tbody>
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### Lab Schedule (tentative)

<table>
<thead>
<tr>
<th>Week</th>
<th>Topic</th>
<th>Room</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Introduction/Watersheds</td>
<td>OTB 206</td>
</tr>
<tr>
<td>2</td>
<td>Hydrology &amp; Geomorphology</td>
<td>OTB 206</td>
</tr>
<tr>
<td>3</td>
<td>Taylor Creek Field Trip (12p-5p)</td>
<td>FSH Loading Dock</td>
</tr>
<tr>
<td>4</td>
<td>Elemental Mass Balance</td>
<td>OTB 206</td>
</tr>
<tr>
<td>5</td>
<td>Nutrient Spiraling</td>
<td>OTB 206</td>
</tr>
</tbody>
</table>
Field Trips

<table>
<thead>
<tr>
<th>Date</th>
<th>Location</th>
<th>Time</th>
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</thead>
<tbody>
<tr>
<td>11 April (A section)</td>
<td>Taylor Creek (S. Seattle)</td>
<td>12p to 5p</td>
</tr>
<tr>
<td>13 April (B section)</td>
<td>Taylor Creek (S. Seattle)</td>
<td>12p to 5p</td>
</tr>
<tr>
<td>29 April (A section)</td>
<td>Big Beef Creek (Seabeck, WA)</td>
<td>8a to 6p</td>
</tr>
<tr>
<td>6 May (B section)</td>
<td>Big Beef Creek (Seabeck, WA)</td>
<td>8a to 6p</td>
</tr>
<tr>
<td>20-21 May (both sections)</td>
<td>Skagit and Methow Rivers (Mazama, WA)</td>
<td>8a 20th to 8p 21st</td>
</tr>
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Skagit & Methow Field Trip (20-21 May)

There is an overnight field trip to the Methow River watershed the 3rd weekend of May (Sat & Sun). Departure will be 8:00a sharp Saturday from the Fishery Science Building (FSH) loading dock on the west side of the building. We will return around 8p on Sunday. We will be staying at a private residence with students camping on the lawn outside. If you do not own camping gear, I encourage you to team up with a classmate and ask your friends. Be prepared for a chilly night with temperatures in the low 40s Fahrenheit. You can also rent gear from the [WAC Gear Garage](https://www.washington.edu/ima/uwild/equipment-rental/). Bring a lunch for Day 1. The rest of your food will be provided. All students will be required to sign two liability waivers. Please see your instructor with questions or concerns. Plan to get wet and have fun!
Information Sharing Policy

Do not share any course materials (lectures, lecture notes, recordings, assignments, quizzes, exams) posted to the class Canvas site or distributed in class. These materials are protected by U.S. copyright law and by University policy (https://depts.washington.edu/uwcopy/UW_Policies/UW_Copyright/) and may not be reproduced, distributed, displayed, posted or uploaded without written permission from the instructor. If you do so, you may be subject to academic misconduct proceedings under the UW Student Conduct Code (https://www.washington.edu/cssc/for-students/student-code-of-conduct/).

Computing Resources

Students are expected to have access to a computer with basic word processing (e.g., MS Word or similar), spreadsheet (e.g., MS Excel), and internet capabilities. Course logistics including announcements, assignments, and readings will be administered using Canvas. Writing assignments must be turned in via Canvas as either a Microsoft Word document (.doc or .docx) or as a .pdf. Problem sets and data analysis exercises will be turned in online as either Excel spreadsheets, Word documents, or as readable photos (if done by hand).

Labs during most weeks will involve computer work. The lab is not equipped with computers for each student. If you have a laptop computer, please bring it with you to the lab sections. If not, you can check one out via the Student Technology Loan Program (https://stlp.uw.edu/).

Academic Integrity

Plagiarism, cheating, and other misconduct are serious violations of the University of Washington Student Conduct Code (WAC 478-120) and your personal contract as a student. I expect that you will know and follow the university’s policies on cheating and plagiarism. Please review the College of the Environment website on academic integrity (https://environment.uw.edu/intranet/academics/academic-integrity/), so that you are clear on what constitutes academic misconduct. Any suspected cases of academic misconduct will be handled according to University of Washington regulations. For more information, see the College of the Environment Academic Misconduct Policy (http://environment.uw.edu/intranet/academics/academic-policies/academic-misconduct/) and the University of Washington Community Standards and Student Conduct website (http://www.washington.edu/cssc/). Be advised that as an instructor at the UW, I have the responsibility to notify University Conduct committees about any suspected student misconduct.

Zoom Conduct

The course will be held in person without a hybrid option. However, if circumstances require a shift to
a virtual format, the following rules will apply.

The UW Student Code of Conduct applies to online behavior as well as in-person or classroom behavior. You are expected to be professional and respectful when attending class on Zoom.

General. Sign in with your full first name and last name as listed on the class roster. Do not use a nickname or other pseudonym when you log in. If you have changed your name to better reflect your gender identity, please send me an email so this can be noted on the roster and then you can use your current name on Zoom. If you do not have access to a computer or smartphone with internet access, call into class using a landline phone. This is not optimal; please try to locate an internet-enabled device to use for class. Please stay engaged in class activities. Close any apps on your device that are not relevant and turn off notifications. Absolutely no disrespect or hate speech. Just like in our in-person class, respectful behavior is required.

Video. Turn on your video when possible. It is helpful to be able to see each other, just as in an in-person class. Exceptions include if you have limited internet bandwidth or no webcam. If you’re unable to find an environment without a lot of visual distractions, use a virtual non-distracting background in Zoom (instructions [here](https://support.zoom.us/hc/en-us/articles/210707503-Virtual-background)).

Audio. Mute your microphone when you are not talking. If you own headphones with a microphone, please use them. Find a quiet, distraction-free location to log in. Turn off any music, videos, etc. in the background.

Chat. Stay on topic. Use the chat window for questions and comments that are relevant to class.

**Face Coverings in the Classroom**

The health and safety of the University of Washington community are the institution's priorities. Please review and adhere to the [UW COVID Face Covering Policy](https://www.ehs.washington.edu/system/files/resources/COVID-19-face-cover-policy.pdf).

**Late Assignment & Regrade Policy**

As a matter of policy, late assignments will not be accepted unless you have received approval from the instructor (me) well in advance of the due date or the circumstances are truly beyond your control. At a minimum, this is at least 24 hours before the due date. I have full discretion over whether to accept a late assignment and you should assume the default to be they will not be accepted.

If you feel an assignment has been graded inappropriately, submit to me over email within one week of the receiving the graded assignment a brief description of why you feel the grade does not accurately reflect the quality of the work along with the original graded assignment. Note that we will likely re-grade the entire assignment, not just the part in question. You can expect to have the re-
grade results within one week of submission (or a notification that it may take longer). If you are unsatisfied with the result of the re-grade you have the option to submit a written appeal to the School of Aquatic and Fishery Sciences Director. Please review the College of Environment Grade Appeal Process website (https://canvas.uw.edu/courses/1372537/assignments/Grade%20Appeal%20Process) for more information.

Email Policy

All students are expected to have a working email address and you will receive email relevant to this course on a regular basis. Students are also expected to regularly check the course Announcements (https://canvas.uw.edu/courses/1372537/announcements) for updates relevant to the course. You are encouraged to reach out to your instructor and TA for help. In general, you can expect emails sent to instructors between 12a and 3p will be responded to the same day. Do not expect instructors to read or respond to emails sent after 6p until the following day nor should you expect responses over the weekend.

Disability Accommodations

It is crucial that all students in this class have access to the full range of learning experiences. At the University of Washington, it is the policy and practice to create inclusive and accessible learning environments consistent with federal and state law. Full participation in this course requires: 1) the ability to attend two 90 minute lectures per week with 40-60 other students; 2) participation in small group discussions on topics relevant to the course, and 3) making short presentations that synthesize small group discussions and/or results of specific analyses to the class orally.

If you anticipate or experience barriers to your learning or full participation in this course based on a physical, learning, or mental health disability, please immediately contact the instructor to discuss possible accommodation(s). A more complete description of the disability policy of the College of the Environment can be found here (http://environment.uw.edu/intranet/academics/teaching/disability-accommodation/). If you have, or think you have, a temporary or permanent disability that impacts your participation in any course, please also contact Disability Resources for Students (DRS) at: 206-543-8924 (V), 206-543-8925 (TDD), uwdss@uw.edu, http://www.uw.edu/students/drs.

Religious Accommodations

Washington state law requires that UW develop a policy for accommodation of student absences or significant hardship due to reasons of faith or conscience, or for organized religious activities. The UW’s policy, including more information about how to request an accommodation, is available at Religious Accommodations Policy (https://registrar.washington.edu/staffandfaculty/religious-accommodations-policy/). Accommodations must be requested within the first two weeks of this course using the Religious Accommodations Request form (https://registrar.washington.edu...
Excused Absence from Class

Students are expected to attend class and to participate in all graded activities, including midterms and final examinations. A student who is anticipating being absent from class due to a Religious Accommodation activity needs to complete the Religious Accommodations request process by the second Friday of the quarter. Students who anticipate missing class due to attendance at academic conferences or field trips, or participation in university-sponsored activities should provide a written notice to the instructor at least a week ahead of the absence. The instructor will determine if the graded activity or exam can be rescheduled or if there is equivalent work that can be done as an equivalent, as determined by the instructor.

Safety

Call SafeCampus at 206-685-7233 anytime – no matter where you work or study – to anonymously discuss safety and well-being concerns for yourself or others. SafeCampus’s team of caring professionals will provide individualized support, while discussing short- and long-term solutions and connecting you with additional resources when requested. For support, resources, and reporting options related to sex- and gender-based violence or harassment, visit UW Title IX's webpage (https://www.washington.edu/titleix/), specifically the Know Your Rights & Resources (https://www.washington.edu/titleix/files/2020/08/KYRR-guide-8-10-2020-LINKED.pdf) guide.

Snoop Dogg says read the syllabus!

Course Summary:
<table>
<thead>
<tr>
<th>Date</th>
<th>Details</th>
<th>Due</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tue May 3, 2022</td>
<td>FISH/ESRM 447 A Sp 22: Watershed Ecology And Management</td>
<td>10am to 11:30am</td>
</tr>
</tbody>
</table>


[https://canvas.uw.edu/courses/1633891/assignments/syllabus](https://canvas.uw.edu/courses/1633891/assignments/syllabus)