ENV-512

Global change ecology and fluvial ecosystems

Battin Tom Ian

Cursus	Sem.	Type
Environmental Sciences and Engineering	MA1, MA3	Opt.

Language of teaching	English
Credits	4
Session	Winter
Semester	Fall
Exam	Written
Workload	120h
Weeks	14
Hours	**4 weekly**
Courses	2 weekly
TP	2 weekly
Number of positions	

Summary

Understand the functioning of rivers, focusing on hydrological, geomorphologic, biogeochemical and ecological components, and their linkages. Analyze impacts of global change on rivers ecosystems, develop skills related to synthesizing and interpreting literature and communicating science.

Content

This course covers three major foundational perspectives of fluvial sciences: physical and hydrological perspectives, biogeochemical perspectives, and ecological perspectives. Course activities will be centered around these ideas, however students should consider the highly interdependent nature of fluvial sciences broadly. The in-person portion of this course will include lectures, discussion, and student presentations. These will be supplemented with reading and writing assignments outside of the classroom. Lectures and readings will describe the basis of relevant fluvial ecosystem science. In-class discussions will supplement the lectures by addressing key questions within the sciences and identify linkages between topics. Writing assignments will assess the comprehension of the readings. Student presentations will focus on major topics within the fluvial sciences and allow students to provide a more in-depth examination.

Keywords

global change, climate change, stream and river ecosystems, hydrology, geomorphology, biogeochemistry, ecology

Learning Outcomes

By the end of the course, the student must be able to:

- Analyze impacts of climate change on river structures and processes.
- Assess / Evaluate mitigation strategies.
- Formulate

Teaching methods

Your grade in this course will be based upon (i) written reviews of scientific literature, (ii) presentations on topics within the fluvial sciences, and a (iii) final written exam. The description of each endeavor and the grading of each are described here.

Expected student activities

Students will read, present and discuss papers. They will write mini-reviews and present science.

Assessment methods

1. Reviews: Understanding and interpreting scientific literature is a critical skill of any scientist, as the progress of science

is built on the foundations of previous research. From reading papers one can learn about the underlying science, the methods used, and ongoing questions within the science. In this course, you will submit written reviews of scientific literature on the topics discussed during the class. Reviews will require incorporating literature provided by the instructors with additional sources online (e.g., GoogleScholar). Some instruction on how to write these reviews will be provided in class. In general, grading will assess the extent to which the student understands the material and can summarize the key ideas.

1.
Presentations

Communication of science is another valuable skill for any professional. Effective communication requires a deep understanding of the material and a committed effort to explain the material to the target audience. In this course, you will give 10-minute presentations as a small group. Presentations should utilize the scientific literature, particularly through the use of figures and images preferentially over text. In general, grading will assess the clarity of the main idea presented, how well that message is supported in the presentation, and slide design.

1.
Final exam

The final exam will contain material from the entire course, including lectures, readings, and student presentations. The exam will primarily be essay based.

Grading:
Presentation and discussions: 20%
Written exam: 80%

Resources

Moodle Link

- https://go.epfl.ch/ENV-512