Course Description, Goals, and Learner Outcomes

This course will provide a comprehensive understanding of the biotic and abiotic factors that influence lake dynamics. We will address the unique ecosystem of Yellowstone Lake with an emphasis on the aquatic invertebrate life. We will accomplish this through lecture, field investigation, and laboratory analysis. Students will synthesize and be able to apply learned skills and knowledge in their classroom (grades 5-12). The course will take place in on the MSU campus and in the field (Yellowstone National Park and other field locations). Montana State University educators, National Park Service resource managers, and other agency professionals will join the class to provide a multi-disciplinary perspective. A detailed class schedule and course reading packet will be available a week prior to the course through the class D2L site.

By the end of the course, expected learner outcomes are that students will 1) have a deep understanding of relationships among physical, chemical, and biological processes that influence lake dynamics, 2) understand and perform field sampling techniques to collect and qualitatively assess aquatic invertebrate life within a lake with their students, 3) perform taxonomic identification of aquatic invertebrates using scientific taxonomic keys and dissecting scopes with their students, 4) understand the role of genetic identification of organisms in ecology and how to incorporate this technology into their classroom, 5) effectively navigate genetic database repositories and incorporate this into their classroom, 6) create and understand how to incorporate the use of ecological conceptual models in their classroom, and 7) design an instructional unit appropriate for their students in their teaching setting.

Instructor Information

Contact Information
Stephanie McGinnis
mcginnis@montana.edu
406-994-6425

Availability
I am available Monday – Friday, from 8am - 5pm Mountain Standard Time on most days. I provide this timeframe to make it easier to communicate with me but you should not hesitate to contact me outside of these times.

Policies

Students will be held responsible for understanding and adhering to all MSU conduct guidelines. These can be viewed at http://www.montana.edu/policy/student_conduct/#courseoutline

Late Assignments
Late assignments will receive a 10% deduction if assignments are not posted by 11:59 pm M.S.T. on the day they are due. Assignments more than 5 days late will not be accepted.

Team and/or Partner Work
You will be expected to work effectively in team and/or partner settings. If you experience problems, you are expected to try to resolve the issue within the team or with the partner. Please feel free to contact me for guidance if you have concerns in this area.

Preparedness for the elements
You will be expected to come prepared for the weather in the field because we will be out in it rain or shine! Bring warm clothes (fleece, gloves, hat, etc.) – it gets COLD! You should also be prepared for short hikes (1-4 miles).

**Course Readings**

All necessary course readings listed below will be available for download on the class D2L site. Students will be responsible for reading all materials on the class D2L site **PRIOR** to class start and will also be expected to read any additional handouts throughout the course.


McGinnis, S. 2016. PCR and Beyond. *Lab explanation and instructions*


**Grading**

25% Participation
   Students are expected to be present at all times and effectively participate in activities and discussion. Participation will be assessed on a daily basis.

15% Group Assignment and Presentation
   Student groups will synthesize class information to create an ecological conceptual model that will be presented to the class.

30% Course Content Assignment - Data Project
   Demonstrate an understanding of knowledge gained in the course by comparing and contrasting data collected at select sites.
15%  Course Content Assignment – GenBank
You will complete an assignment using a current scientific tool, GenBank. GenBank is a data
repository for genetic information that is used globally by scientists.

15%  Classroom Implementation.
Develop a unit or lesson plan that implements knowledge gained in this course that is appropriate for
your student age and teaching setting.