



2012 Rivers Institute Syllabus for 2 Credit Course

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(Email is the most reliable method of communication and will receive the quickest response.)

Course Description

The three-day, two-credit field-based course addresses the natural overlaps between science processes and content and the skills of literacy. Our natural affinity to water makes rivers and watersheds a useful and familiar context for teaching and learning.

Course Goals

- To explore how using rivers as a context can help your students meet specific MN education standards in science and language arts among other curricular areas
- To model inquiry-based science and engineering investigations in a watershed context

Course Objectives

Participants will:

- Understand the science, engineering and literacy opportunities represented by the river
- Practice specific skills of science literacy
- Learn social science and natural science content relevant to the river
- Investigate strategies for teaching literacy skills through science content
- Engage in critical thinking that connects the content and practice of science, engineering, and literacy skills into an interdisciplinary system of thinking

Course Structure

Participants will:

- Practice the skills of observation and visual note taking
- Practice the skills of scientific inquiry to investigate aquatic and terrestrial ecosystems and the surrounding geology
- Share strategies for helping students ‘think like scientists’ as they practice the skills of literacy
- Explore engineering challenges and practice the engineering design process
- Participate in learning activities from Project WET
- Participate in learning activities from Waters to the Sea
- Create plans to implement science, inquiry and literacy investigations in their classrooms

Course Process and Schedule

The Rivers Institute will take place over three days, with a follow-up online component. Participants in this course will work directly with professionals working on the river to investigate how concepts taught in the classroom are applied in the field. Core concepts in

science, engineering and literacy will be explored, as well as strategies for integrating curriculum using the river as a context.

Throughout the institute, participants will engage in activities from Project WET and Waters to the Sea. These activities will introduce concepts, offer concluding activities, and demonstrate how existing curricula can bring watershed concepts into the classroom both experientially and electronically.

Day One:

The morning is spent canoeing the river, practicing the skills of observation and visual note-taking. Science begins with direct observation of phenomena. Participants will become more familiar with scientific observational skills while learning about the natural history of the river from naturalists who will accompany the canoes. Participants will develop lines of inquiry that will guide the work done over subsequent days.

In the afternoon of the St. Croix Institute, participants will conduct an inquiry-based investigation into the geology of the area that surrounds the river. During the Mississippi River Institute, participants will examine the floodplain forest that surrounds the river. Using notebooks to practice the skills of literacy, field investigations will highlight the literacy opportunities as science content is explored. Participants will make detailed observations of specific phenomena, gather data, argue their findings and use evidence to support their reasoning. These processes will be repeated throughout the institute, creating a process for inquiry that participants can recreate in classrooms and other educational program settings.

Day Two:

In smaller groups, participants will spend the day doing inquiry-based science investigations, investigating the connections between macroinvertebrates and water quality and examining either the geology of the area surrounding the river (Mississippi River Institute) or the floodplain forest that surrounds the river (St. Croix River Institute). During the field investigations, participants will use notebooks to practice literacy skills as they explore science content in field investigations. Participants will make detailed observations of specific phenomena, gather data, argue their findings and use evidence to support their reasoning.

Day Three:

In the morning, participants will investigate a variety of engineering challenges. Using simple materials to solve complex challenges dealing with water and the environment, participants will experience the engineering cycle while investigating the similarities and differences between science and engineering. In the afternoon, participants will explore CGEE's *Waters to the SEA* CD-ROM and engage in literacy activities that support science learning, explore key components and best practices for using science notebooks, and inquire into the nature of science through hands-on activities.

Submitting Assignments

- Assignments need to be saved as Microsoft Office Word documents and sent as attachments in an email to Cara Rieckenberg (crieckenberg01@hamline.edu) no later than one month after the last date of the Institute. Please send only one email with both assignments attached.
- Save assignments as Last Name-Action Plan AND Last Name-Final Reflection (*example: Rieckenberg-Action Plan*)
- In the subject area of the email, type Last Name-Assignments.

Evaluation and Expectation of Assignments

For a grade of “B”, participants will:

- Attend and actively participate in all activities of the Rivers Institute
- Submit final reflection of the Rivers Institute using daily reflection notes as guide
- Create a lesson plan (of at least quality level four on the Lesson Plan Rubric) demonstrating how you will implement aspects of what you have learned during the Rivers Institute, and complementary experiential and electronic resources into their instruction. If receiving a mini grant, plans must include a budget. See ***Rivers Institute Lesson Plan Details and Rubric*** for details on this portion of the assignment.

For a grade of “A” participants will complete all the requirements for a grade of “B” plus:

- Create an Action Plan (of at least quality level four on the Implementation Plan Rubric) demonstrating how you will implement aspects of what you have learned during the Rivers Institute, and complementary experiential and electronic resources into their instruction. If receiving a mini grant, plans must include a budget. See ***Rivers Institute Action Plan Details and Rubric*** document for details on this portion of the assignment.

Grades of “C” or below are not accepted in degree programs at Hamline University.

Assignments will be accepted up to one month after the last meeting date of the Rivers Institute. Grades will be posted within one week of that final due date. There will be no exceptions for late assignments. Credit and mini-grants will not be given if assignments are late. A grade of “F” will be assigned if assignments are not received by the final due date.

Attendance and Expectations

Class attendance is an important component of the course. When an occasion occurs that prevents a participant from part of the Rivers Institute, it is the student’s obligation to inform the instructor of the conflict beforehand. If circumstances require absence from Institute for more than a half day, the participant should consider withdrawing from the course. In all cases, students are expected to respect the decision of the instructor regarding attendance policies specific to the course.

Field Based Courses

We will be outdoors for the majority of the Rivers Institute. It is expected that you will come prepared for outdoor learning with the appropriate clothing, sunscreen, bug spray and reusable water bottles. Close toed shoes are recommended as are long pants since investigations will occur in all landscapes.

Other recommendations for supplies include a small backpack for carrying supplies, colored pencils for science notebook sketches, a clipboard or other hard surface for field writing.

Snacks and drinks may be brought along and enjoyed throughout the Institute as long as they are not a distraction. Healthy and filling lunches will be provided.

Academic Integrity

Dishonesty of any kind in relation to academic work threatens the integrity of the academic enterprise and is prohibited at Hamline University. Such dishonesty includes plagiarism, ghost writing, and falsifying official information concerning one's academic background or status.

Plagiarism is the unacknowledged use of another person's work or ideas. Any passage copied verbatim, with small changes, or in paraphrase must be acknowledged with a citation. Ghost writing is preparing work for another or having another prepare one's own work.

When a student is found to be in violation of the academic dishonesty policy, academic penalties may be prescribed by the instructor of the course in question, including but not restricted to, the requirement of additional work, an assignment of a failing grade on the work in question, or a failing grade for the entire course.

When a student is found to have falsified official information, the administrative official responsible will determine whether the violation merits suspension from the University.

The student has the right to appeal the instructor's or administrator's decision to the appropriate graduate school dean or program director, and if still dissatisfied, to the provost. In the case where the dean or director is the instructor or administrator, a second member of the school/program faculty will be asked to perform an independent investigation and make a recommendation. The provost's decision is final.