

**University of Alaska Fairbanks
Bristol Bay Campus**

Course Syllabus

Term: Spring 2016
Course Title: Introduction to Water Quality II: Monitoring and Assessment
Dept. & Num: ENVI 111
Credits: 1 (1+0)
Grading: Letter Grade
Prerequisites: ENVI 110 or consent of instructor
Dates: TBD
Days - times: Monday thru Thursday, 8:00 am to 4:30 pm
Location: Face to face in needed location
Instructor: Daniel Bogan, Research Associate
Position: Aquatic Ecology Program
Alaska Natural Heritage Program
University of Alaska Anchorage
Phone: 907.786.4964
Fax: 907.786.4958
Email: bogan@uaa.alaska.edu
Hours Available: TBA
Text: United States. Environmental Protection Agency. *Volunteer Stream Monitoring: A Methods Manual*. 1997. Print.
<http://www.epa.gov/owow/monitoring/volunteer/stream>.

Supplemental readings - Murdoch, Tom, Martha Cheo, and Kate O'Laughlin. *The streamkeepers field guide*. 5. Adopt-a-Stream Foundation, 1996. Print.
- Hafele, Rick, and Steve Hinton. *Guide to Pacific Northwest Invertebrates*. 2. Oregon Trout, 2003. Print.

Supplies Water quality sampling equipment and performance evaluation standards will be provided by UAF but participants are encouraged to bring the equipment that they need to be certified on.

Course Description:

ENVI F111 Introduction to Water Quality II: Monitoring and Assessment

1 credit Offered as demand warrants

Course builds upon methods learned in ENVI 110 with emphasis placed upon data quality objectives, electronic storage of data, and information analysis and reporting. Methods and equipment used for surface water monitoring will be introduced. Students start the process of developing an EPA approved Quality Assurance Project Plan (QAPP) for surface water quality monitoring. **Prerequisites:** *ENVI 110 Letter graded (1+0)*.

Goals:

The goal of the class is to reinforce proper use and maintenance of standard surface water quality testing equipment so that defensible data can be collected and recorded. Students will also be able to review and manage a water quality database, conduct quality assurance checks on data, and demonstrate a working knowledge of equipment and techniques necessary for recertification for surface water quality monitoring.

Learning Objectives:

By participating in this class, students will be able to:

- follow guidelines prescribed by kit/meter manufactures on the operation maintenance, and storage of their water quality testing equipment.
- record reagent status and order new reagents for their water quality testing kits.

- describe safety procedures while testing water quality.
- calibrate their Hanna and/or YSI water quality meter(s).
- pass performance standards for precision and accuracy for all the water quality tests.
- perform the SOP for macroinvertebrate collection, sample processing, and data analysis.
- describe proper collection, storage, evaluation, correction, database archiving, and reporting of water quality data collected.
- work with an outside lab to obtain water quality data.
- access information on water quality standards in Alaska.
- deploy and retrieve temperature data loggers, and download and store temperature data.
- electronically store and manage their data.
- begin work on drafting their own QAPP using a template

Instructional Methods

The course will use a combination of lecture, laboratory, and field experiences. Laboratory and field sessions are intended to provide opportunity for students to conduct water quality sampling, testing, and data recording to satisfy the requirements of a QAPP. Lectures will include supplemental topics to assist students in data quality assurance, along with special topics dealing with water quality standards and report information.

Course Schedule

The course will meet over four days for a total of 16.5 hours. Lectures are every morning, lab, fieldwork, data entry and analysis every afternoon.

Day 1	(4 hours lecture, 1 hour field/lab) Discuss summer 2013 data collection Review of meter and kit SOPs Review water temperature logger operation, deployment Introduction of stream flow and discharge measurements Field – Review of water quality tests; deploy temperature loggers; stream flow and discharge
Day 2	(3 hours lecture, 1 hour field/lab) Recalibration of Hanna Combo meter Review bio-assessment using benthic macro-invertebrates Field – conduct volunteer level bio-assessment in a near-by stream; collect temperature loggers Lab – sort, identify, and count macro-invertebrates Lab – data entry and analysis using Excel and on-line database
Day 3	(2.5 hours lecture, 1 hour field/lab) Recalibration of Hanna Combo meter Calibration, maintenance, and operation of the YSI 556 Meter and LaMotte 2020 Turbidimeter Working with an outside lab Lab – data entry and analysis Lab – downloading and plotting water temperature data Writing water quality reports
Day 4	(4 hours lecture) Recalibration of Hanna Combo meter Lab – Performance Evaluation Standards for pH, SpC, temp, DO Lab – Data management Introduction to QAPP and QAPP template QAPP assignment

Total hours: Lecture = 13.5; Lab = 3

Schedule subject to change to meet instructor's calendar

Course Policies

Students are expected to conduct themselves in a responsible and courteous manner. Attendance is mandatory. Late assignments are accepted only when pre-arranged with the instructor. UAF requires all students to conduct themselves according to the UAF Honor Code. Cheating, copying, and other forms of academic dishonesty may result in disciplinary action and other sanctions. It is expected that tolerance of others with different gender, race, and ethnic backgrounds be shown in class discussions and writings. The instructor reserves the right to amend this syllabus as needed.

Assignments and Quizzes

Assignments

1. Students will be tested on safety measures, calibration and proper disposal of solutions.
2. Students will be tested on what is required in a QAPP.
3. Students will show proficiency in using provided water quality instruments.

Quizzes

Each morning a pop quiz will be given on the previous day topics.

Evaluation/Grading

This is a letter-graded course

A (90-100%)

B (80-89%)

C (70-79%)

D (60-69%)

F (59% or lower)

Students will participate in lectures, contribute to class discussions, take part in field and laboratory activities and enter and review data in an Excel spreadsheet.

- 10% Students are responsible to attend all class sessions
- 30% Pass the performance evaluation standards for water quality testing and demonstrate field sampling techniques using standard operating procedures.
- 30% Class assignments and discussions. Students will be evaluated on their participation and outcomes of various data management assignments.
- 30% Field and lab activities. Students will be evaluated on their ability to follow standard operating procedures for: calibrating their water quality instrument, collecting water quality information in the field and evaluating macroinvertebrates in the lab.

Student Support Disability Services:

University of Alaska Fairbanks Bristol Bay Campus Student Services at:

PO Box 1070

Dillingham, Alaska 99576

907-842-5109, 800-478-5109, Fax: 907-842-5692

Support and Tutoring is available to eligible students through UAF Student Support Services or Bristol Bay Campus. Contact UAF via the Internet at <http://www.uaf.edu/sssp/> or BBC by calling the toll free number at 1.800.478.5109.

Library services are available at <http://www.uaf.edu/library/> or call the toll free library information number at 1.800.478.5348 and ask for the off-campus librarian.

UAF has a Disability Services office that operates in conjunction with the College of Rural and Community Development (CRCD) campuses and UAF's Center for Distance Education (CDE). Disability Services provides academic accommodations to enrolled students who are identified as being eligible for these services and insures that UAF students have equal access to the campus and course materials. If you have specific physical, psychiatric or learning disabilities and require reasonable accommodations, please let the instructor know as soon as possible so that your learning needs may be appropriately met. You will need to provide documentation of your disability to Disability Services and request a letter of accommodation.

Disability Services is located in room **208 of the Whitaker Building** on the UAF Fairbanks Campus and can be reached weekdays between 8:00 am and 5:00 pm at:

Phone - (907) 474-5655

TTY - (907) 474-1827

Email - uaf-disabilityservices@alaska.edu

Federal reporting obligations under Title IX:

University of Alaska Board of Regents have clearly stated in BOR Policy that discrimination, harassment and violence will not be tolerated on any campus of the University of Alaska. If you believe you are experiencing discrimination or any form of harassment including sexual harassment/misconduct/assault, you are encouraged to report that behavior. If you report to a faculty member or any university employee, they must notify the UAF Title IX Coordinator about the basic facts of the incident. Your choices for reporting include:

- 1) You may access confidential counseling by contacting the UAF Health & Counseling Center at 474-7043;
- 2) You may access support and file a Title IX report by contacting the UAF Title IX Coordinator at 474-6600;
- 3) You may file a criminal complaint by contacting the University Police Department at 474-7721.