

**ENVI 112: Introduction to Water Quality III: Data Quality Assurance**  
**University of Alaska Fairbanks – College of Rural and Community Development**

**Course Syllabus**

<b>Course Title:</b>	Introduction to Water Quality III: Data Quality Assurance
<b>Dept. &amp; Num:</b>	ENVI 112
<b>Credits:</b>	1 (1 + 0)
<b>Prerequisites:</b>	ENVI 110-Introduction to Water Quality I: Measurement, and ENVI 111-Introduction to Water Quality II: Monitoring and Assessment, or permission of instructor
<b>Dates:</b>	TBD
<b>Days and Times:</b>	Monday thru Wednesday, 8:00 am to 4:30 pm
<b>Location:</b>	Face to face in needed location
<b>Instructor:</b>	Daniel Bogan, Research Associate Aquatic Ecology Program Alaska Natural Heritage Program University of Alaska Anchorage
<b>Phone:</b>	907.786.4964
<b>Fax:</b>	907.786.4958
<b>Email:</b>	bogan@uaa.alaska.edu
<b>Hours Available:</b>	TBA
<b>Text:</b>	Volunteer Stream Monitoring: A Methods Manual <a href="http://www.epa.gov/volunteer/stream/stream.pdf">http://www.epa.gov/volunteer/stream/stream.pdf</a> EPA. 1997.
<b>Supplemental readings</b>	Streamkeeper's Field Guide. 2001. Adopt-A-Stream Foundation Guide to Pacific Northwest Aquatic Invertebrates. 2003. Oregon Trout.
<b>Supplies</b>	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 F112 Introduction to Water Quality III: Data Quality Assurance

1 credit      Offered as demand warrants

Students participating in this class will review proper use of surface water quality testing equipment and calibration and operation methods learned in ENVI 110 and ENVI 111. Emphasis in this class will be placed on conducting data quality assurance measures that meet data quality objectives, writing and following a data Quality Assurance Project Plan (QAPP), and data analysis and reporting. Students will continue to develop their own U.S. Environmental Protection Agency approved QAPP for surface water quality monitoring. **Prerequisites:** *ENVI 111 Letter graded (1+0)*.

**Instructional Methods**

The course will use a combination of lecture and laboratory experiences. Laboratory sessions are intended to provide opportunity for students to conduct quality assurance checks on water quality sampling data they've collected and recorded in ENVI 110 and ENVI 111 to satisfy the requirements of a QAPP. Lectures will include supplemental topics to assist students in data quality assurance, along with special topics, such as working with an outside water quality lab.

**General Description of Goals:**

The goal of the class is to have students write a QAPP for water quality monitoring that can be used in rural Alaska. This QAPP will allow a village or individuals to conduct quality assurance/quality control for all data they generate under their water quality monitoring plan.

### **Student Learning Outcomes/Objectives:**

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

- write their own QAPP, using a template developed by the Native American Fish & Wildlife Society.
- describe proper collection, storage, evaluation, correction, database archiving, and reporting of water quality data collected.
- pass performance evaluation standards for precision and accuracy for water quality tests.
- electronically store and manage their data.
- work with an outside lab to obtain high quality water quality data.
- follow data quality assurance guidelines to ensure and document high quality data.
- download, graph, analyze, and store temperature data obtained from temperature loggers.

### **Course Schedule**

The course will meet over three days for a total of 16.5 hours. Every day, the class will involve a mix of lecture and lab work.

Day 1	(5 hours lecture, 1 hour lab) Discuss QAPP development—identify areas of concentration for each student Discuss fieldwork and data collection from previous summer—lessons learned Meter/equipment testing, inspection, maintenance, and documentation Review meter and kit SOPs—calibrate meter(s) Lab – Data validation and verification exercises Lab – Validation and verification of data from previous summer Lab – Electronic storage of calibration logs Homework: Read chapter 2 of Streamkeeper’s Field Guide.
Day 2	(5 hours lecture, 1 hour lab) Documentation and record keeping QA/QC for bioassessment Review water temperature logger operation, deployment, data download, data management Lab – analyzing/summarizing water temperature data Working with an outside lab, with emphasis on data quality and analysis Homework: Read chapter 2 of Guide to Pacific Northwest Aquatic Invertebrates.
Day 3	(3.5 hours lecture, 1 hour lab) Lab – Recalibration of Hanna Combo meter Lab – Performance Evaluation Standards for pH, SpC, temp, DO Record keeping QAPP work session

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 skills using lab equipment (i.e., safety measures, proper calibration and use, proper disposal and proper storage), and pass performance evaluation standards for each parameter being tested.
2. Students will demonstrate (through a test) how to conduct quality assurance measures outlined in their respective QAPPs.
3. Students will complete an EPA-approved QAPP for water quality monitoring using a template.

### 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 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 and lab sampling techniques using standard operating procedures.
- 30% Class assignments and quizzes- Students will be evaluated on their participation and outcomes of various data management and data quality assurance assignments.
- 30% Lab activities. Students will be evaluated on their ability to follow standard operating procedures for calibrating, operating, and maintaining their water quality instrument(s) and equipment.

### 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](mailto: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.