

**The Johns Hopkins University
Krieger School of Arts and
Sciences Advanced Academic
Programs
Environmental Sciences and Policy Program**

Summer 2018

DRAFT Syllabus

Course Title: *Field Methods in Stream and Water Quality Assessment*
(420.631.51)

Class Location: Johns Hopkins University School of Advanced
International Studies; Washington DC Campus; Room TBA;
Field Trip Locations: DC/MD Suburbs/TBA

Instructor: Daniel Boward (Dan)

Contact Information: Mobile (410.812.9129); email dboward1@jhu.edu. For appointments, questions, or emergencies (e.g., field trip transportation issues), you may call or email me. I will respond to your email inquiry within 24-48 hours of receipt.

Course Objectives

1. To become familiar with field and laboratory methods used to characterize the chemical and physical properties of streams, including morphological and hydrological assessments.
2. To become familiar with approaches used to monitor and assess aquatic communities of Maryland streams and environmental conditions affecting them.
3. To learn the basic taxonomy of representative water quality and habitat indicators found in Maryland streams.
4. To gain a basic understanding of how water quality assessments integrate into state and federal regulatory programs, such as the Clean Water Act, with specific examples drawn from Maryland and regional programs.

Reference and Course Materials

No textbook will be used for this course. Electronic copies of selected papers and other necessary reference materials will be provided via Blackboard. Some hard copy materials will be distributed during class.

Chest waders are required to participate in the course.

Academic Evaluation

Activity	(% of Grade)
Participation and group effort	5
Mid-term exam	10
Field Habitat Practical	10
Benthic Macroinvertebrate Taxonomy Practical	10
Fish Taxonomy Practical	10
Paper/presentation	15/5
Final Exam	35

JHU AAP Grading Scale:

98–100%	A+
94–97%	A
90–93%	A-
88–89%	B+
84–87%	B
80–83%	B-
70–79%	C
<70%	F

Attendance Policy

Class attendance will be taken. If you miss > 2 lectures and/or the field trips, be advised this could affect your grade. Please advise me of any travel or interruptions where you may miss class or the field trips – preferably before the fact.

Accommodations Policy

The Johns Hopkins University is committed to providing reasonable and appropriate accommodations to students with disabilities. Students in Advanced Academic Programs (AAP) who are in need of accommodations should visit <http://advanced.jhu.edu/current-students/current-students-resources/disability-accommodations/> for the appropriate steps and documentation needed. Requesting accommodations before the semester is preferable, but not required. The student should submit the Request for Accommodation Form prior to the beginning of each semester (s)he is registered to ensure that accommodations continue for that semester. Depending on the accommodation, there may be a time delay before accommodations can be implemented.

FIELD METHODS IN STREAM AND WATER QUALITY ASSESSMENT

Course Activities (tentative)

NOTE: Bring your own lunch for all field trips

Field Trip 1: Location TBA. We'll meet at 8:30 AM on Saturday, June 23. We'll travel to two streams of contrasting quality (if time permits) in the DC/MD area. Physical habitat protocols and physico-chemical assessment will be covered at each stream as well as an introduction to benthic macroinvertebrate sampling and community assessment.

Lab 1: Benthic macroinvertebrate taxonomy lab (Saturday, June 30 in Olin Hall – Homewood Campus, Room TBA). We'll start with the mid-term exam and then spend the rest of the day identifying benthic macroinvertebrates found during Field Trip 1 (other preserved specimens will be available).

Lab 2: Fish taxonomy lab (Tuesday, July 3 in Olin Hall – Homewood Campus, Room TBA). We'll start with an introduction to the families of local freshwater fish and then you'll have some time to practice your taxonomy skills using preserved specimens.

Lab 3: Fish taxonomy lab (continued -Thursday, July 5 in Olin Hall – Homewood Campus, Room TBA). We'll continue practicing identifying preserved specimens of freshwater fish.

Field Trip 2. Location TBA. We'll meet at 8:30 AM on Saturday, July 7 somewhere in the DC/MD area and travel to at least two streams where we'll go over fish sampling protocols and then sample fish using standard techniques used by area agencies and consultants. You'll be able to further hone your fish taxonomy skills by identifying specimens in the field.

Watershed Assessment Paper and Presentation (i.e., your “project”): Students will work solo or in teams of two, depending on class size. Each team will choose a watershed containing streams of contrasting quality and evaluate the ecological conditions at several streams, calculate Indices of Biotic Integrity, and assess potential stressors. All stream condition data will be provided by Maryland DNR. The team's work will be presented via a short paper (hard copy submitted during our last class) and a Power Point or Prezi presentation with both team members participating in the presentation. Both the paper (hard copy only) and presentation (electronic copy) will be due by 9:00 PM on Thursday, July 12. Unless there are extenuating circumstances (with arrangements made with me), 5% of the total value of the project will be deducted for each day your paper is late. There will be no makeup dates/times for presentations. This will apply to all team members.

Mid-term and Final Exams: The mid-term and final exams will be closed book and a mix of short answer and essay questions.

NOTE: All students must complete the online form titled Student Field Trip and Waiver Liability available here <http://advanced.jhu.edu/current-students/forms/student-field-trip-release-and-wavier-liability/> . This must be completed BEFORE the first field trip on June 23.

FIELD METHODS IN STREAM AND WATER QUALITY ASSESSMENT

<i>Class/Date</i>	<i>Topic/Event</i>
Class 1 (Tuesday, June 19; 6:00 PM – 9:00 PM)	Class Introduction and Orientation; Topical Issues; Sampling Design; Chemical Assessment
Class 2 (Thursday, June 21; 6:00 PM – 9:00 PM)	Physical Habitat Assessment; Biological Assessment (Part I); Intro to Benthic Macroinvertebrates
Field Trip 1; DC/MD area (June 23; 8:30 AM – 5:00 PM)	Physical Habitat Assessment, Physico-chemical Assessment, Introduction to Benthic Sampling, Taxonomy, and Assessment
Class 3 (June 26; 6:00 PM – 9:00 PM)	Biological Assessment (Part I); Mid-term exam
Class 4 (June 28; 6:00 – 9:00 PM)	Biological Assessment (Part II)
Lab 1; Homewood Campus (June 30; 8:30 AM – 5:00 PM)	Mid-term exam; Benthic Macroinvertebrate Taxonomy Lab
Lab 2; Homewood Campus (July 3; 6:00 – 9:00 PM)	Fish Taxonomy Lab
Lab 3; Homewood Campus (July 5; 6:00 – 9:00 PM)	Fish Taxonomy Lab (continued)
Field Trip 2; DC/MD area (July 7; 8:30 AM – 5:00 PM)	Fish Sampling and Field Taxonomy
Class 5 (July 10; 6:00 PM – 9:00 PM)	Team Presentations; Review for Final
Class 6 (July 12; 6:00 PM – 9:00 PM)	Final Exam; Paper Due

JHU Ethics Statement: The strength of the university depends on academic and personal integrity. In this course, you must be honest and truthful. Ethical violations include cheating on exams, plagiarism, reuse of assignments, improper use of the Internet and electronic devices, unauthorized collaboration, alteration of graded assignments, forgery and falsification, lying, facilitating academic dishonesty, and unfair competition. Report any violations you witness to the instructor. Read and adhere to JHU's policy: <http://advanced.jhu.edu/students/plagiarism/>