

FNR 351 AQUATIC SAMPLING TECHNIQUES SPRING 2010

Instructors

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Office Hours

Dr. Sepúlveda: By appointment only
Dr. Goforth: By appointment only

Meeting Times

Lecture: Tu, 1:30 - 2:20 p.m., 216 FORS
 Th, 1:30 - 2:20 p.m., G077 PFEN
Lab: Th, 2:30 - 5:20 p.m., G077 PFEN

Course Description

Aquatic Sampling Techniques presents an introduction to laboratory and field sampling methods used in aquaculture, limnology, and fisheries biology. The course emphasizes the proper care and use of laboratory equipment and field sampling gears, as well as the development of sampling protocols for collecting representative, non-biased fisheries and aquatic sciences data. Prerequisites: FNR 242, MA 224, and STAT 301.

Course Objectives

1. To develop knowledge of the basic principles and techniques associated with hatchery and freshwater fish culture systems and the assessment of physical habitat, water quality, lower trophic levels, and fish populations in lentic and lotic environments.
2. To provide practical experience in aquatic resource assessment, data analysis and reporting, and decision-making as it pertains to the sampling and management of fish culture systems and aquatic ecosystems.
3. To sharpen critical thinking, written and oral communication, and professional skills relative to fisheries and aquatic science sampling considerations and issues.

Special Needs

If you need course adaptations or accommodations because of a disability, please contact the instructors as soon as possible in order to make the necessary arrangements.

Reading Assignments

The required text for this course is Fisheries Techniques, Second Edition by Murphy and Willis.

Scientific Writing Style

The sampling plan must follow the "Guide for Authors" requirements as outlined in American Fisheries Society journals (<http://www.fisheries.org/afs/publications/journals/tafs.pdf>). Information obtained from the Internet is not considered to be a valid source of scientific information and will not be accepted for your sampling plan assignment.

Sampling Plan Assignment

One major assignment to be completed as part of the course is the development of a fisheries and aquatic sciences sampling plan. This project will be conducted in teams (2 students/team) for an assigned lake, river, or stream. In addition to a written report detailing the objectives, priorities, and methodology of the sampling plan (100 points), each team will also be required to give an oral presentation of their sampling plan following the final exam (maximum of 20 minutes; 75 points). Students will also be required to evaluate themselves and their other team members regarding their respective efforts and contributions to the project (25 points; due at the close of the end of class symposium following the final). Total value for this assignment is 200 points (20% of the final course grade). Dr. Goforth will provide additional guidance for the development of the sampling plans after Spring Break.

Laboratory Exercises

Seven laboratory exercises (21.4 points each; 150 points total; 15% of the final course grade) will be given out as assignments that will be directly relevant to scheduled laboratory or field-trip activities that particular week. In some cases, these exercises will be completable prior to the end of the laboratory period in which they were assigned. However, if an assignment cannot be finished within the allotted time period, it will be due no later than the beginning of the lab period the following week.

Field Reports

Communicating the results of field sampling activities is a critical, yet often overlooked component of biological surveys. Students will write two reports to communicate the results of field sampling activities conducted during laboratory periods. Each of these two reports will contribute up to 75 points to the final grade (150 points total). Dr. Goforth will provide additional instructions for the field reports during the semester.

Exams

A midterm and final exam will be administered during the semester, with each exam valued at 250 points (25% each of the final course grade). The midterm exam is scheduled for March 05. The final exam will be given during the designated time period to be assigned at a later date by the University. In all cases, students will not be allowed to retain copies of the midterm or final exams.

Class Participation

Because this is a techniques course, your participation and attendance is a critical component of the learning process. Be sure to dress accordingly and bring all required equipment (see below) to each designated class or laboratory period.

Equipment

For this course, you will be required to supply your own chest waders, boots, and raingear. Please note that these items are also required for FNR 330/371 Natural Resources Practicum (i.e., summer camp). For both courses, these items will be used for laboratory exercises and will not be provided by the department. Further, they are items that you will find useful throughout your professional career in fisheries and aquatic sciences. The instructors will be happy to provide suggestions regarding specific gears if you need help selecting these items.

Grading

All assignments are due at the beginning of the next laboratory period from which they were assigned. Late assignments will be docked 10% of the total point value for each day late and missed exams will be assigned a zero score. If you cannot take an exam or turn in an

assignment on time, it is your responsibility to contact Drs. Sepúlveda or Goforth (not the teaching assistant) prior to the date in question. With the exception of emergencies, exam make-ups or late assignment requests will only be honored if a legitimate reason is provided in writing at least one week prior to that date.

Posting of Lectures and Laboratory Handouts:

Notes will be posted in Blackboard or sent via email before lectures and labs.

Component	Points Available	Percentage of Total
Sampling Plan	200	20%
Laboratory Exercises (7)	150	15%
Field Reports (2)	150	15%
Exams (2)	500	50%
TOTAL	1000	100%

Academic Dishonesty

Drs. Sepúlveda or Goforth will not tolerate academic dishonesty (e.g., cheating, plagiarism, etc.) by students enrolled in FNR351. This is in full compliance with the Purdue University Academic Dishonesty Statement (viewable at:

<http://www.edst.purdue.edu/rud/edst%20200/Academic%20Dishonesty,%20Adaptive%20Programs,%20and%20Emergency%20Statements.pdf>). Students found to be guilty of academic dishonesty will receive a "0" score for the related assignment.

Lecture/Lab Schedule

<u>Date</u>	<u>Lecture Topic</u>	<u>Lab Topic</u>	<u>Readings</u>
Jan 12	Course Overview; Units of Measure		
Jan 14	Water Quality	ARL Tour and Safety Procedures; Water Quality Measurements	FT 76-79
Jan 19	Marking and Tagging		FT 353-383
Jan 21	Care and Handling of Fishes	Fish Anesthesia; Length and Weight; Marking and Tagging of Fish	FT 121-144; FT 447-454
Jan 26	Fish Anatomy		
Jan 28	Morphometry and Meristics	External and Internal Anatomy; Morphometry and Meristics Assessments	
Feb 02	Fish Health Assessment		FHM 559-564
Feb 04	Tissue Collection	Necropsy-Based Health Assessment	FT 433-446
Feb 09	Fish Hematology		
Feb 11	Blood Collection	Blood Collection & Hematology	

Feb 16	Fish Reproduction		
Feb 18	Fish Reproduction	Fish Spawning and Egg Fertilization; Fecundity, Egg Size	
Feb 23	Fish Age and Growth		FT 483-512
Feb 25	Fish Food Habits & Diet	Fish Otolith/Stomach Processing	FT 513-532
Mar 02	Survey Planning, Design, & Theory: Introduce Sampling Plan Assignment		FT 1-15
Mar 04		Midterm Exam	
Mar 09	Data Management & Analysis		FT 17-62
Mar 11	Aquatic Invertebrates: Insects & Mussels	Field Safety; Topo Maps; Aerial Photos; GIS; GPS (Inside)	FT 63-80; FT 335-352
Mar 16	Spring Break - No Class		
Mar 18	Spring Break - No Class	Spring Break – No Lab	
Mar 23	Common Fishes of IN		
Mar 25	Aquatic Invertebrate Sampling (Outside)	Aquatic Habitat: Lotic Ecosystems	FT 83-92 FT 93-108
Mar 30	Aquatic Habitat: Lentic Ecosystems		FT 83-92 FT 109-115
Apr 01	GPS Use and Invertebrate Sample Processing	GPS Use and Invertebrate Sample Processing (Wright Center)	
Apr 06	Passive and Active Sampling Gears		FT 157-220
Apr 08	Passive Sampling Gears	Entanglement & Entrapment Gears: Gill Nets & Fyke Net Retrieval & Deployment (Outside)	
Apr 13	Principles of Electrofishing		FT 221-253
Apr 15	Small Stream Sampling (Outside)	Stream Backpack Electroshocking; Stream Seining (Outside)	
Apr 20	Toxicant/Hydroacoustic		FT 303-333; FT 385-432
Apr 21	Mid-size Stream Sampling (Outside)	Tow Barge Electroshocking (Outside)	
Apr 27	Underwater Biotelemetry		FT 555-590
Apr 29	River Fish Sampling and Fish Tagging (Outside)	Boat Electroshocking (Outside)	
May week of May 03 Final Exam & Sampling Plan Presentations (Sampling Plan Reports Due)			