

**Fish Culture Techniques and Practices**  
**FRSHWTR Special Topic, 3 credits**  
**9 am to 1 pm**  
**Third Four-week Session (June 24-July 20, 2024)**

Day/Time: Tuesday, Wednesday, and Thursday 9:00-1 PM  
Location: SFS 1084 and Lab 178, 600 E Greenfield Ave., Milwaukee, WI, 53204

Instructor: Dong-Fang Deng, Ph.D.  
Office Location: Rm 3053 600 E. Greenfield Avenue  
Office Time: 1-3pm, Tuesday, Wednesday, and Thursday or by appointment  
Office Telephone: 414-382-7597

Class Format: This course will primarily consist of lectures, hands-on lab activities, field trips, and discussions.  
Course Website: [www.uwm.edu/canvas](http://www.uwm.edu/canvas)

#### **COURSE DESCRIPTION**

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This course is an introduction to fish culture techniques with a focus on model fish (zebrafish) and aquaculture fish for food or conservation (Lake sturgeon, yellow perch, and Walleye). The principles can be applied to other species of fish. Each class will include one-hour lectures and three-hour laboratory exercises. Lectures will provide the necessary background and knowledge for laboratory activities. Students will perform a 3-week feeding trial on fingerling or juvenile fish to obtain hands-on experience and a practical understanding of the daily care and maintenance of fish. Lab activities will also include practices including broodstock management, larval fish production (spawning, fertilization, and hatching), fish lab tours as well as a field trip. Students will be required to finish three weekly reports and quizzes, a 10-minute presentation of lab activities, and a final project report. The report should include the following sections: a title, an abstract, an introduction, materials and methods, results, a discussion, references, tables, and/or figures. This course is intended for undergraduate and graduate students majoring in freshwater sciences, zoology, animal science, aquatic environmental study, fisheries, and aquaculture.

#### **LEARNING OUTCOMES**

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Student will

- Build up basic lab skills commonly used in fish biology and nutrition research, including analytical procedures, sampling of fishes, data collection and quality control methods, and project management.
- Demonstrate an understanding of the key elements required for experimental designs.
- Show competence in writing standard operation protocols for lab research.
- Be able to apply the techniques to general fish lab maintenance and understand the potential application of lab skills to practical application.
- Develop critical and creative thinking as well as effective communication skills including literature discussion, writing, and presentation.

**PREREQUISITE COURSEWORK:** One of the following courses should be taken prior to this course- BioSci 152 Foundations of BioSci II and Chem 104 General Chemistry (undergraduates do not apply), or prior consent of the instructor.

**Course Materials:** We will use the book “Methods for Fish Biology” by Carl B. Schreck and Peter B. Moyle (American Fisheries Society, 1990. ISBN: 0-913235-58-X). Use of the text is optional. Handout materials on background and instruction for each laboratory exercise will be provided ahead.

## ASSIGNMENTS AND GRADES

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**ATTENDANCE:** 48 points (12 classes X 4 points = 48 points). See the course policies below for **Attendance and Tardiness**.

**QUIZ:** 3 x 4 POINTS = 12 POINTS

**LAB REPORT:** 3 x 5 POINTS = 15 POINTS

**FINAL REPORT:** 20 POINTS (undergraduate)

**FINAL PRESENTATION:** 5 POINTS

**PAPER REVIEW:** 3 x 10 POINTS = 30 POINTS

**PROPOSAL:** 20 POINTS (graduate student)

**Grade Percentage:** A 92-100%; A- 90-91%; B+ 88-89%; B 82-87%; B- 80-81%; C+ 78-79%; C 72-77%; C- 70-71%; D+ if 68-69%; D 62-67%; D- 60-61%; F <60

## STUDENT TIME INVESTMENT

The UWM Faculty Document 2838 identifies the time students need to invest in a course to be successful. This is a 3-credit-hour course. Students are expected to devote approximately 12 hours per credit to the course weekly over the 4 weeks (about 144 hours). The time commitment will include in-class activities (48 hours), completion of assigned readings (32 hours) and three lab report preparations (36 hours), and a final report and presentation preparation (28 hours).

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## COURSE POLICIES

**Attendance and Tardiness:** It is expected that students attend all lectures and tours. Participation in each lab activity to obtain information for your reports for the entire course is mandatory. Please notify the instructor in advance if you will be unable to attend class. There is no make-up lab. Attendance will be recorded at the beginning of each class. A brief lecture and description of the lab activity will be discussed at the beginning of each lab. Failure to arrive on time will miss important information and requirements of each lab work. Thus, you will not be able to conduct the lab on that day. A grade of zero will be given for all missed work.

**Cell phones and laptops:** You are welcome to use a laptop or tablet in class if it contributes to your learning. Students who appear distracted by a computer, cell phone, or tablet will be asked to refrain from using the device. Texting during class is prohibited.

**Late Assignments:** Assignments should be submitted at the beginning of class on their scheduled due date. If an assignment is submitted late but within seventy-two hours of the time it was due, then the maximum possible points that can be received will decrease to 50% of the original value. No assignments will be accepted after this period unless prior arrangements have been made with the instructor.

**Office hours and E-mail:** The instructor can be reached during office hours or by e-mail. Office hours and location are listed on the first page of this syllabus. All e-mail communication with the instructor is expected to be composed clearly, using formal, professional language. In general, an e-mail will be answered during normal work hours (8 am – 5 pm) Monday through Friday.

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## UNIVERSITY POLICIES

All of the following university policies can be found on the Secretary of the University website (<http://uwm.edu/secu/syllabus-links/>)

**Special Accommodations:** If you require an accommodation plan, please see the link below to pursue the creation of such a plan with the Accessibility Resource Center. Each Student is responsible for sharing the Accommodation Plan with each instructor electronically via email or in print during instructor office hours. (<http://uwm.edu/arc>). The instruction will work in collaboration with the Accessibility Resource Center to meet student needs.

**Students with disabilities:** Notice to these students should appear prominently in the syllabus so that special accommodations are provided in a timely manner. <http://uwm.edu/arc/>

**Religious observances:** Accommodations for absences due to religious observance should be noted. <https://apps.uwm.edu/secu-policies/storage/other/SAAP%201-2.%20Accommodation%20of%20Religious%20Beliefs.pdf>

**Students called to active military duty:** Accommodations for absences due to call-up of reserves to active military duty should be noted.

- Students: <http://uwm.edu/active-duty-military/>
- Employees: <https://www.wisconsin.edu/ohrwd/download/policies/ops/bn9.pdf>

**Incompletes:** A notation of "incomplete" may be given in lieu of a final grade to a student who has carried a subject successfully until the end of a semester but who, because of illness or other unusual and substantiated cause beyond the student's control, has been unable to take or complete the final examination or to complete some limited amount of term work. <https://apps.uwm.edu/secu-policies/storage/other/SAAP%201-13.%20Incomplete%20Grades.pdf>

**Drop or withdrawal policy:** Please visit this website for details. <https://uwm.edu/registrar/dates-deadlines/add-drop-calendar/>.

**Discriminatory conduct:** Discriminatory conduct will not be tolerated by the University. It poisons the work and learning environment of the University and threatens the careers, educational experience, and well-being of students, faculty, and staff. <https://apps.uwm.edu/secu-policies/storage/other/SAAP%205-1.%20Discriminatory%20Conduct%20Policy.pdf>

**Title IX/Sexual Violence:** Title IX is a federal law that prohibits sex discrimination in education programs or activities, and UWM policy prohibits such conduct (see Discriminatory Conduct, above). This includes sexual violence, which may include sexual harassment, sexual assault, relationship violence, and/or stalking in all educational programs and education-related areas. UWM strongly encourages its students to report any instance of sex discrimination to UWM's Title IX Coordinator ([titleix@uwm.edu](mailto:titleix@uwm.edu)). Whether or not a student wishes to report an incident of sexual violence, the Title IX Coordinator can connect students to resources at UWM and/or in the community including, but not limited to, victim advocacy, medical and counseling services, and/or law enforcement. For more information, please visit <https://uwm.edu/sexual-assault/>.

**Academic misconduct:** Academic misconduct is taken very seriously by the School of Freshwater Sciences and the University of Wisconsin-Milwaukee.

Academic misconduct, such as cheating on an exam or plagiarism, is a violation of the academic honor code that can carry severe sanctions. Cheating or plagiarism will, at minimum, result in a zero for the assignment; flagrant violations will follow university policy. Please see: <https://uwm.edu/deanofstudents/conduct/academic-misconduct/> for more information.

**Complaint procedures:** Students may direct complaints to the head of the academic unit or department in which the complaint occurs. If the complaint allegedly violates a specific university policy, it may be directed to the head of the department or academic unit in which the complaint occurred or to the appropriate university office responsible for enforcing the policy. <https://apps.uwm.edu/secu-policies/storage/other/SAAP%205-1.%20Discriminatory%20Conduct%20Policy.pdf>

**Grade appeal procedure:** A student may appeal a grade on the grounds that it is based on a capricious or arbitrary decision of the course instructor. Such an appeal shall follow the established procedures adopted by the department, college, or school in which the course resides or in the case of graduate students, the Graduate School. These procedures are available in writing from the respective department chairperson or the Academic Dean of the College/School. <https://apps.uwm.edu/secu-policies/storage/other/SAAP%201-10.%20Grade%20Appeals%20by%20Students.pdf>

**LGBT+ resources:** Faculty and staff can find resources to support the inclusivity of students who identify as LGBT+ in the learning environment. <http://uwm.edu/lgbtrc/>

**Smoke and Tobacco-Free campus:** UWM prohibits smoking and the use of tobacco on all campus property. <https://apps.uwm.edu/secu-policies/storage/other/SAAP%2010-8.%20Smoke%20and%20Tobacco-Free%20Campus%20Policy.pdf>

Course Schedule	Date	Topic	Assignment
<b>Module 1</b>	<b>Week 1</b>		
Experimental Design and Basic Techniques	6/24/24	- Introduction & Course Organization - IACUC training - Research Concept & Design - Research Lab Tour	
	6/25/24	- Develop Standard Operation Protocol - Feeding Trial Initiation - Water quality	
	6/26/24	- Morphology of Fishes - Anesthesia Methods - Dissection Techniques	Lab report 1
<b>Module 2</b>	<b>Week 2</b>		
Nutrition and Feed Techniques	7/1/24	-Feed Nutrition -Feed preparation and Feeding Techniques	Paper review (graduate)
	7/2/24	-Sample processing methods -Nutrient Analysis Methods (Dry matter, ash, protein, lipid)	Quiz 1
	7/3/24	Farm tour (Aquaponic Farm and rainbow trout farm)	Lab report 2
<b>Module 3</b>	<b>Week 3</b>		
Biology Basis	7/8/24	Broodstock management (zebrafish and yellow perch as models)	Paper review (graduate)
	7/9/24	Larval fish production and maintenance	Quiz 2
	7/10/24	-Growth performance and end product quality	Lab report 3
<b>Module 4</b>	<b>Week 4</b>		
Application	7/15/24	Data Collection & Management (feeding trial termination)	Paper review
	7/16/24	-Fish Culture for Research & Teaching -Virtual tour (Steven Point demonstration facility)	Quiz 3
	7/17/24	Final project report and presentation	Final report