

AQUA-2: Applied Aquaculture

Course Information

Semester & Year: Spring 2025

Course ID and Section number: AQUA-2-E7626

Instructor's name: Jasmine Iniguez

Day & Time: M/W 10:05 – 11:30 AM

Location: AT 132

Lab: W 12:15 – 3:15 PM, ROOM AT 108 or Cal Poly Fish Hatchery

Course units: 4

Instructor Contact Information

Office location: SCI 216I

Office hours: In person by appointment or via ZOOM

Phone number: (707) 476-4528

Email address: jasmine-iniguez@redwoods.edu

Instagram: CR_AQUACULTURE

Catalog Description

This course provides students the opportunity to apply their general understanding of aquaculture to succeed in the industry. Students will focus on understanding and practicing the principals involved in aquaculture management and operating closed, recirculating aquaculture systems (RAS) as well as other systems for finfish and shellfish. Students will learn about the operation and activities surrounding the care and maintenance of fish stocks, tank systems, and equipment. The course will include in-class lectures, labs, and hands-on experiences with local hatchery and aquaculture facilities.

Course Student Learning Outcomes

1. Research, design, communicate, and apply the principles of aquaculture to create, operate, and manage elements of multiple aquaculture systems within various legal, social, economic, and environmental contexts.

Prerequisites/corequisites/ recommended preparation

AQUA-1: Intro to Aquaculture or waived if taken concurrently with AQUA-1

Recommended Course Textbook

Aquaculture: Farming Aquatic Animals and Plants, 3rd Edition

Author: John S. Lucas & Paul C. Southgate

Publisher: Wiley-Blackwell

ISBN: 9781119230861

Aquaculture Production System, 2012

Author: James. H. Tidwell

Publisher: World Aquaculture Society and Wiley Blackwell

ISBN: 9780813801261

eBook FREE access at:

<https://ebookcentral.proquest.com/lib/redwoods-ebooks/detail.action?docID=827051&pg-origsite=primo>

Supplemental & Recommended References/Textbooks

The Yellow Book of Recirculating Aquaculture, 5th edition

Author: Michael B. Timmons and Brian J. Vinci 2022

Publisher: Ithaca Publishing Company LLC

ISBN: 978-0-9712646-9-4

Southern Regional Aquaculture Fact Sheets <https://srac.msstate.edu/publications.html>

Evaluation & Grading Policy:

Course Requirements	Percent of Total Grade	Due Date
Exam 1	15	Wednesday, Feb. 19
Exam 2	15	Wednesday, Mar 31
Final Exam	15	Wednesday, May 14
Aquaculture Project	15	Sunday, May 11th
Aqua Symposium	10	Wednesday, May 7
Lab Reports	15	TBA
Field Trips	10	See Schedule
Participation (attendance taken into account)	5	

CR has a set policy for how course percentages convert to grades:

A > 92%; A- 90-92%; B+ 87-89%; B 83-86%; B- 80-82%; C+ 77-79%; C 70-76%; D 60-69%; F 59 and below

Late Assignments:

*Each student is responsible for completing all assignments and activities as specified by the instructor by the date indicated. **Please stay on task, as late assignments will be penalized and loose 5% for each day they are late.*** If you have an emergency (e.g. hospitalization, death in the family, car accident) please notify me as soon as you can if this affects your coursework or

attendance. Please contact me immediately if something in the foreseeable future is approaching as well.

Exam Make-up Policy:

This class will have a total of three exams (100 points each), which make up 45% of your grade! **You must have a serious, verifiable, and emergency related excuse to miss a lecture exam. If you have an emergency (hospitalization, family/friend death, car accident, quarantine) please notify me as soon as you can if this affects your ability to take the exam on the scheduled date.** Please contact me 12 hours in advance if something in the foreseeable future is approaching as well. **If you do not notify me and or do not provide a legitimate excuse an automatic 10% will be taken from your makeup exam.**

Tentative Field Trips:

There will be tours at the Cal Poly Marine Lab, Mad River Fish Hatchery, Potentially Sunken Seaweed, and an overnight field trip camping at a commercial sturgeon farm called, The Fishery in Galt, California.

- **Wednesday, Feb 12 @ 1:00 – 2:00PM:** Mad River Hatchery Tour
- **Wednesday, March 26 @ TBA:** Cal Poly Marine Lab Tour
- **Friday – Sunday April 25-27:** Weekend camping field trip to commercial sturgeon farm, The Fishery, Galt CA. Leave Friday and come back Sunday
- **TBD, Sunken Seaweed?**

Lab Exercises @ Cal Poly Humboldt:

- **Wednesday, Jan 29:** Spawning
- **Wednesday, Feb 26 :** Anesthesia Lab
- **Wednesday, April 2:** Fish Biomass and Feeding Rates
- **Wednesday April 16:** Ultrasound examinations of trout and sturgeon

NOTE: CR does not provide transportation so therefore students are expected to provide their own for traveling for field trips. Please consider carpooling with each other! However, for the field trip to galt- we will be taking the CR van.

Lab Reports:

Students will be required to write a number of lab reports for certain labs. The lab report will be due one week after the scheduled lab. If there is a worksheet assigned during lab, the worksheet can either be turned in after lab if complete OR one week after the lab. Refer to handout for detailed instructions, grading rubric, and example report.

- **Submission:** Submitted via word documents through Canvas. pdf will not be accepted and will result in a zero

- **Lab Report Format:**
 - Single spaced
 - 12-point font
 - Times New Roman
 - 1-inch margins on all sides

- **Report Outline:**
 - I. Title
 - II. Introduction
 - III. Materials and Methods
 - IV. Results
 - V. Discussion & Conclusion
 - VI. Citations: minimum **2 credible citations** from research publications or academic sources (not general websites)

- **Additional Instructions for Figures and Tables:**
 - Place all figures and tables at the end of the document
 - Ensure each figure/table has a descriptive title and is referenced in the main text

Applied Aquaculture Project:

Students will be assigned a project of their choice in which they will spend the whole semester taking care of a system (husbandry task, maintenance, feeding, water quality). Students may work alone or in pairs, depending on the scale of the project. This assignment requires students to write a final paper.

Student Learning Objectives:

1. Develop practical skills in aquaculture system maintenance, including feeding, water quality testing, and troubleshooting.
2. Gain experience in scientific observation, data collection, and record- keeping
3. Synthesize hands on experience with scientific literature in comprehensive research paper

Project Requirements:

- 1. System Selection/ Project Selection**
 - Freshwater Aquaponics
 - Crawfish Pond Cage Culture Production
 - Monitoring Pond Water Quality and Assessing Fish Conditions With Traps/Fishing
 - Reproducing and raising Crayfish in Tanks

- 2. Maintenance Task**
 - Feeding and monitoring health

- Cleaning and maintaining system (filter changes, syphoning waste, water exchanges)
- Testing weekly water quality (pH, ammonia, nitrite, nitrate, salinity)
- Observing and recording growth rates, behaviors, or other relevant data

3. Research Paper

- Introduction
- Materials and Methods
- Results
- Discussion
- Conclusion
- References

References: Utilize google scholar (<https://scholar.google.com/>) to search for academic journals. If there is a research manuscript you are unable to access, please let me know. I may be able to get it for you.

DUE DATES:

Assignment	Due Date	Points
Project Proposal	Sunday, Feb 16	25
First Draft (Title page, Intro, Materials & Methods)	Sunday, April 16	25
Presentation (Symposium)	Wednesday, May 7	25
Final Draft	Friday, May 16	25

AQUA 2: Applied Aquaculture				M/W: 10:05-11:30 AM; LAB W 12:15- 3:15 PM
Date	Week 1	Lecture Topic	Textbook Reference	Wednesday AT 108
20-Jan	M	No Class	No Class	Plumbing Identification System Components Project Selection
22-Jan	W	Course Overview & Lab Overview	Syllabus	
	Week 2			
27-Jan	M	Review of Principles of Aquaculture Review	CH. 2	Cal Poly Humboldt Spawning
29-Jan	W	Fish Reproduction Review	CH. 6	
	Week 3			
3-Feb	M	Water Quality Review	CH. 4	CR: Water Quality Testing
5-Feb	W	WQ Case Scenarios/Treatments		
	Week 4			
10-Feb	M	Aquaculture Diseases	CH. 10-12	Field Trip: Mad River Fish Hatchery Tour (1-2PM)
12-Feb	W	Exam 1 Review		

	Week 5			
17-Feb	M	No Class (Presidents Day)		CR: Diseases Microscopes
19-Feb	W	Exam 1		
	Week 6			
24-Feb	M	Post Harvest & Processing	CH. 13	Cal Poly Humboldt Anesthesia Lab
26-Feb	W	Hauling and Transporting	CH. 13	
	Week 7			
3-Mar	M	Marketing and Economics	CH. 14	Potential Lab Cancellation
5-Mar	W	Aquaculture Reproduction	CH. 6	
	Week 8			
10-Mar	M	Seaweed Aquaculture	CH. 15	CR: Boat Knots Set up Artemia & Rotifers
12-Mar	W	Bivalve Production	CH. 24	
	Week 9			
17-Mar	M	Spring Break - No Class		Spring Break - No Class
19-Mar	W	Spring Break - No Class		Spring Break - No Class
	Week 10			
24-Mar	M	Aquaculture Nutrition & Feeds	CH. 8	Cal Poly Marine Lab Tour
26-Mar	W	Exam 2 Review		
	Week 11			
31-Mar	M	No Class (Cesar Chavez Day)		Cal Poly Humboldt Fish Biomass & Feeding Rates
2-Apr	W	EXAM 2		
	Week 12			
7-Apr	M	Carp and Koi Aquaculture	CH. 16	CR: Artemia, Rotifers Live Feeds
9-Apr	W	Sturgeon Aquaculture	External Resources	
	Week13			
14-Apr	M	Catfish Aquaculture	CH. 19	CR- Ultrasound Examinations Sturgeon or Trout
16-Apr	W	Tilapia Aquaculture	CH. 18	
	Week 14			
21-Apr	M	Crustaceans (Crayfish)	CH. 23	Field Trip: The Fishery, Sturgeon Farm – Galt, CA
23-Apr	W	Shrimp	CH. 22	
	Week 15			
28-Apr	M	Salmonid Aquaculture	CH. 17	Harvest and Finalize Project Data!
30-Apr	W	Aquaculture Trends and Future	CH. 27	
	Week 16			
5-May	M	Aquaculture Careers/Guest Lectures		CR AQUA Project Symposium
7-May	W	Review Final Exam		
	Week 17			
12-May	M	Final Week (No Class)		NO LAB
14-May	W	Finals Exam: 10:45 – 12:45 PM		

Educational Accessibility & Support

College of the Redwoods is committed to providing reasonable accommodations for qualified students who could benefit from additional educational support and services. You may qualify if you have a physical, mental, sensory, or intellectual condition which causes you to struggle academically, including but not limited to:

- Mental health conditions such as depression, anxiety, PTSD, or bipolar disorder
- Common ailments such as arthritis, asthma, diabetes, autoimmune disorders, and diseases
- Temporary impairments such as a broken bone, recovery from significant surgery, or a pregnancy-related disability
- Neurodevelopmental disorders such as a learning disability, intellectual disability, autism, acquired brain injury, or ADHD
- Vision, hearing, or mobility conditions

Available services include extended test time, quiet testing environments, academic assistance and tutoring through the [LIGHT Center](#), counseling and advising, alternate formats of course materials (e.g., audio books, braille, E-texts), assistive technology, learning disability assessments, approval for personal attendants, interpreters, priority registration, on-campus transportation, adaptive physical education and living skills courses, and more. If you believe you might benefit from disability- or health-related services and accommodations, please contact [Student Accessibility Support Services \(SASS\)](#). If you are unsure whether you qualify, please contact Student Accessibility Support Services (SASS) for a consultation: sass@redwoods.edu.

SASS office locations and phone numbers

Eureka campus

- Phone: 707-476-4280
- Location: Student Services building, first floor SS113

Del Norte campus

- Phone: 707-465-2353
- Location: main building, near the Library

Klamath-Trinity campus

- Phone: 707-476-4280

Student Support Services

Good information and clear communication about your needs will help you be successful. Please let your instructor know about any specific challenges or technology limitations that might affect your participation in class. College of the Redwoods wants every student to be successful.

The following online resources are available to support your success as a student:

[CR Online Learning Support](#)

Tech support, laptop loans, guides to using Canvas, installing Office 365 for free, and more.

[Library Articles & Databases](#)

Find the best library databases for your research.

[Online Tutoring Resources](#)

Participate in tutoring over Zoom.

To learn more about the resources available to you, click on a title bar below, or click the down arrow to expand them all.

Klamath-Trinity students can contact the CR Klamath-Trinity Office for specific information about student support services at 530-625-4821.

Community College Student Health and Wellness

[National Suicide Prevention Lifeline](#)

If you are in distress or are with someone at risk right now, call or text the National Suicide Prevention Lifeline.

Call the National Suicide Prevention Lifeline

1-800-273-TALK (8255)

Text the National Suicide Prevention Lifeline

741-741

[Timely Care](#)

When you're not feeling well physically or distressed mentally, Timely Care can offer the help you're looking for in just a few quick taps. Students can schedule an appointment anytime via phone, video, and chat. [Log in or set up an account with Timely Care.](#)

[Mental Health Counseling](#)

Students should text, email, or fax Shawna Bell directly for scheduling and/or services.

- Text: 707-496-2856
- Email: shawnabmft@gmail.com
- Fax and voicemail: 707-237-2318

[Wellness Central](#)

Resources, tools, and trainings regarding health, mental health, wellness, basic needs and more designed for California community college students, faculty and staff are available on the California Community Colleges [Wellness Central.](#)

Counseling

[Counseling and Advising](#) can assist students in need of academic advising and professional counseling services. Call, email or stop by one of our offices to make an appointment!

Counseling and Advising office locations and contact info

Eureka campus

- Phone: 707-476-4150
- Location: Student Services Building, first floor
- Email: counseling@redwood.edu
- Hours: Monday through Friday, 9am to 4pm. Summer hours may vary

Del Norte campus

- Phone: 707-476-2300
- Location: Main Building, next to the library
- Hours: Summer hours may vary

Klamath-Trinity campus

- Phone: 530-625-4821
- Email: KT-staff@redwoods.edu
- Hours: Summer hours may vary

Basic Needs Center

[Basic Needs Center](#) provides for the health and safety of students by providing access to healthy food, financial resources, and referrals to safe and secure housing. [Submit a request for services and information.](#)

Basic Needs Center contact info

- Phone: 707-476-4153
- Email: the-grove@redwoods.edu

Learning Resource Center

The Learning Resource Center includes the following resources for students:

Library Services

[Introduction - Library Services for Students - LibGuides at College of the Redwoods](#) promotes information literacy and provides organized information resources.

Multicultural and Equity Center (MCE)

The [Multicultural and Equity Center](#) is a dynamic and inclusive place that supports all students in their academic and personal journeys at the college. We do this by creating community, home away from home, and a safe place for cultural expression, cross-cultural learning, access to college and dignity resources, and social justice work opportunities. The MEC is committed to retention and student success by offering activities related to leadership development, student connectedness and student equity. We are a student-

centered program that fosters respect for all people.

Academic Support Center

The [Academic Support Center](#) offers tutoring and test proctoring for CR students.

Student Tech Help

Technical [Support](#) provides students with assistance around a variety of tech problems.

Extended Opportunity Programs and Services (EOPS)

[EOPS/CARE](#) (EOPS) provides services to eligible income disadvantaged students including: textbook awards, grants, career academic and personal counseling, transportation assistance, tutoring, laptop, calculator and textbook loans, priority registration, graduation cap and gown, workshops, and more!

TRiO Student Success Program

The TRiO Student Support Services Program provides eligible students with a variety of services including academic advising, career assessments, assistance with transfer, and peer mentoring. Students can apply for the program with the [Eureka TRiO office](#) or the [Del Norte TRiO office](#).

Veterans Resource Center

The [Veterans Resource Center](#) supports and facilitates academic success for Active Duty Military, Veterans and Dependents attending CR through relational advising, mentorship, transitional assistance, and coordination of military and Veteran-specific resources.

CalWORKS

California Work Opportunity & Responsibility to Kids ([CalWorks](#)) provides supportive services to student parents with children under the age of 18, who are receiving cash assistance (TANF benefits), to become self-sufficient. Services include: transportation assistance, basic student supplies, tutoring, priority registration, laptop and calculator loans, career, academic, and personal counseling, and more!

Spring 2025 Dates

Date	To Remember
January 17	Last day to register for classes (day before the first class meeting)
January 18	Classes begin
January 20	Martin Luther King's Birthday (All Campuses Closed)
January 24	Last Day to add a class
January 31	Last Day to Drop & Receive a Refund
February 2	Last Day to Drop w/out a "W"
February 3	Census Date (20% of class)
February 14	Lincoln's Birthday (All Campuses Closed)

Date	To Remember
February 17	President's Day (All Campuses Closed)
March 6	Last Day to Petition to Graduate & Petition for Certificate
March 17 - 22	Spring Break (No Classes)
March 28	Last Day for Student/Faculty Withdrawal
March 31	Cesar Chavez Day (All Campuses Closed)
May 10 - 16	Final Examinations
May 16	Last Day to File P/NP Option
May 16	Semester Ends
May 23	Grades Due
May 26	Memorial Day (All Campuses Closed)
May 30	Grades Available for Transcript Release

Academic dishonesty

In the academic community, the high value placed on truth implies a corresponding intolerance of scholastic dishonesty. In cases involving academic dishonesty, determination of the grade and of the student's status in the course is left primarily to the discretion of the faculty member. In such cases, where the instructor determines that a student has demonstrated academic dishonesty, the student may receive a failing grade for the assignment and/or exam and may be reported to the Chief Student Services Officer or designee. The Student Code of Conduct ([AP 5500](#)) is available on the College of the Redwoods website. Additional information about the rights and responsibilities of students, Board policies, and administrative procedures is located in the [2024-2025 College Catalog](#) and [CR Board and Administrative Policies](#).

AI Use Class Policy

Recent advancements in generative artificial intelligence (AI) have made large language models such as ChatGPT and Google's Bard widely available. Sometimes, using these tools appropriately can help us overcome barriers and allow us to focus on deeper learning. However, overuse of these tools can undermine the development of our critical and creative thinking skills. In addition, AI outputs are often unreliable and frequently subject to bias. For these reasons, it is sometimes appropriate and sometimes inappropriate to use generative AI in the completion of assignments or in discussion posts. For this class, please see the specific assignment instructions for guidance on how and when generative AI tools may be used appropriately as we're working on and learning from a particular assignment. Also, please keep in mind that you are responsible for anything you submit; please carefully review all AI-generated outputs, screening them for accuracy, bias, appropriateness, and fidelity to your perspective.

Disruptive Behavior

Student behavior or speech that disrupts the instructional setting will not be tolerated. Disruptive conduct may include, but is not limited to: unwarranted interruptions; failure to adhere to instructor's directions; vulgar or obscene language; slurs or other forms of intimidation; and physically or verbally abusive

behavior. In such cases where the instructor determines that a student has disrupted the educational process, a disruptive student may be temporarily removed from class. In addition, the student may be reported to the Chief Student Services Officer or designee. Additional information about the rights and responsibilities of students, Board policies, and administrative procedures is located in the [2024-2025 College Catalog](#) and [CR Board and Administrative Policies](#).

Inclusive Language in the Classroom

College of the Redwoods aspires to create a learning environment in which all people feel comfortable in contributing their perspectives to classroom discussions. It therefore encourages instructors and students to use language that is inclusive and respectful.

Canvas Information

- Log into Canvas at [My CR Portal](#)
- For help logging in to Canvas and general tech help, visit [Canvas Support Home](#)
- Once you're logged in to Canvas, you click on the Help icon on the left menu
- Canvas online orientation workshop: [Canvas Student Orientation Course](#)

Setting Your Preferred Name and Pronouns in Canvas

Students have the ability to display personal pronouns and an alternate first name in Canvas. Students may change their pronouns on their own in Canvas (Account :: Settings :: Edit Settings). To request a change to your preferred list name, contact [Admissions and Records](#). Your Preferred Name will only be listed in Canvas; this does not change your legal name in our records. See the [Student Information Update form-2022.pdf](#).

Emergency Procedures / Everbridge

College of the Redwoods has implemented an emergency alert system called Everbridge. In the event of an emergency on campus you will receive an alert through your personal email and/or phones. Registration is not necessary in order to receive emergency alerts. Check to make sure your contact information is up-to-date by logging into [WebAdvisor](#) and selecting 'Students' then 'Academic Profile' then 'Current Information Update.'

Please contact Public Safety at 707-476-4112 or campus-safety@redwoods.edu if you have any questions. For more information visit [Campus Safety](#). Please review the [EurekaEmergencyMap_S24.pdf](#) for campus evacuation sites, including the closet site to this classroom (posted by the exit of each room).

In an emergency that requires an evacuation of the building anywhere in the District:

- Be aware of all marked exits from your area and building
- Once outside, move to the nearest evacuation point outside your building
- Keep streets and walkways clear for emergency vehicles and personnel

Do not leave campus, unless it has been deemed safe by the campus authorities.

To learn more about campus-specific Emergency Procedures, click on a title bar below, or click the down

arrow to expand them all.

Del Norte Campus Emergency Procedures

Please review the [Crescent City campus emergency map](#) for campus evacuation sites, including the closest site to this classroom (posted by the exit of each room). For more information, visit [Campus Safety](#).

Klamath-Trinity Campus Emergency Procedures

Please review the responsibilities of, and procedures used by, the College of the Redwoods, Klamath Trinity Instructional Site (KTIS) to communicate to faculty, staff, students and the general public during an emergency. It is the responsibility of College of the Redwoods, Klamath-Trinity Instructional Site (KTIS) to protect life and property from the effects of emergency situations within its own jurisdiction.

In the event of an emergency, communication shall be the responsibility of the district employees on scene:

1. Dial 911, to notify local agency support such as law enforcement or fire services.
2. If safe to do so, notify key administrators, departments, and personnel.
3. If safe to do so, personnel shall relay threat information, warnings, to ensure the school community is notified.
4. Contact 530-625-4821 to notify of situation.
5. Contact Hoopa Tribal Education Administration office 530-625-4413
6. Notify Public Safety 707-476-4111.

In the event of an emergency, the responsible district employee on the scene will:

1. Follow established procedures for the specific emergency as outlined in the College of the Redwoods Emergency Procedure Booklet.
2. Lock all doors and turn off lights if in lockdown due to an active shooter or similar emergency.
3. Close all window curtains.
4. Get all inside to safe location Kitchen area is best internal location.
5. If a police officer or higher official arrives, they will assume command.
6. Wait until notice of all is clear before unlocking doors.
7. If safe to do so, move to the nearest evacuation point outside building (Pooky's Park), directly behind the Hoopa Tribal Education Building.
8. Do not leave site, unless it has been deemed safe by the person in command.