Techniques in Aquaponics
Biology 384/584, 1-credit
Spring 2021

Required Text:
Nelson, R.L. 2008. Aquaponic food production: Raising fish and plants for food and profit. Available at UWSP Bookstore, Amazon.com, or http://aquaponics.com ($29.95)

Recommended text:
Rackocy, J. 2011. Aquaponics Q and A.ISBN: 978-0-9779696-3-0. Available at http://aquaponics.com ($39.95)

Instructors:

Dr. Chris Hartleb
Office: 442 TNR, UWSP
Email: chartleb@uwsp.edu
Phone: 715-346-3228

Rebecca Nelson
Email:nelson@aquaponics.com
Phone: 608-297-8708

John Pade
Email: pade@aquaponics.com
Phone: 608-297-8708

Location: Laboratory exercises for the Techniques in Aquaponics course will take place at Nelson& Pade, Inc.'s campus (www.aquaponics.com) in Montello, WI from April 30 – May 2. Classes start at 9 am. This is a 3-day course that provides hands-on training in aquaponics; "short but sweet!"

Outline:

Date	Topic	Chapter in Text	Time
Aquaponic Systems & Water			
April 30	Aquaponic system design, management & maintenance. *Learn to build aquaponic system components, understand component roles, functions and operations.*	1	4-hour lab
April 30	Water flow dynamics & quality testing. *Learn flow dynamics, retention time, and nutrient loads. Associate component role with nutrient conversions and water quality. Learn water-testing techniques and understand results of testing.*	2	4-hour lab
Fish & Plants			
May 1	Fish stocking, weight, feed calculations, sampling & harvesting. Determine fish loading densities, measure fish growth and estimate feed rates. Learn how to sample and harvest fish with minimal stress.	4	4-hour lab
May 1	Seed propagation & transplanting / insect ID and management. Practice seeding, transplanting and harvesting plants. Understand the role of seeding tables and plant harvesting cycles. Practice integrated pest management and harmful/beneficial insect ID.	5	4-hour lab
Business & Marketing			
May 2	Business plan, economics & harvesting. Develop hypothetical business and financial plans. Learn about marketing your products and the various venues for products sales.	16	4-hour lab
May 2	Marketing & presentations. Join a team and market your products from your hypothetical business. Final presentations and taste-testing.		3-hour lab

Learning Outcomes:

Upon successful completion of this course you should be able to –

1. Recognize the multiple levels of complexity at which biological systems operate from organism to ecosystem and be able to explain the emergent properties and process characteristic of each level.
2. Demonstrate proficiency in the methods and philosophy of science, including articulation and application of the Scientific Method, collection and analysis of biological data and application of professional ethics.
3. Articulate the application of biological sciences to meet the needs of society, including basic research, stewardship of biodiversity, human health, and entrepreneurial innovation.

Grading: Five group lab reports at 20 points per report = 100 points (100%)

Discretionary points: Points may be added or subtracted from your final course grade based on effort, improvement, participation, alacrity, and attitude.
Grade Distribution (in %):

A = 100-94	B- = 83-80	D+ = 69-67
A- = 93-90	C+ = 79-77	D = 66-60
B+ = 89-87	C = 76-74	F = <60
B = 86-84	C- = 73-70	

Lab Exercises:

You will be required to complete 5 group lab reports. Data collection will be accomplished during class; data analysis & summaries should be completed during and after class. Reports are due the next day. Credit can be earned with exercise accuracy, proper calculations, thorough analysis, explanations, and neatness. It is suggested that you bring a calculator, pens and pencils, and a lined notebook. WiFi is available at no cost.

Lunch, drinks and snacks will be provided each day at no additional cost.

Rules & Grades:

There are NO "make-ups" for lab exercises. Lab exercises will be due the day after the exercise is completed. Only university approved absences, accompanied by appropriate evidence (see undergraduate catalog), will be accepted if you miss the labs. Contact the instructors **before** the lab if there may be a problem. Discussion regarding grades or grading practices will only be conducted during appointments with the instructors; this ensures privacy and confidentiality.

Academic Misconduct: You are responsible for the honest completion and representation of your work and for the respect of others' academic endeavors. Any act of cheating, plagiarism, or academic misconduct is subject to the penalties outlined in UWS Chapter 14; http://www.uwsp.edu/admin/stuaffairs/rights/rightsCommBillRights.pdf

Students with Special Needs: First see Student Disability Services and complete the necessary paperwork. Then, contact me so that arrangements can be made for note-taking, testing, report completion and field trip activities.

Driving to Nelson & Pade, Inc.:

The Nelson and Pade, Inc. business campus is at: W3731 State Road 23, Montello, WI 53949. Students are responsible for their own travel and/or lodging arrangements. A car-pool folder will be established in the course Canvas site along with a list of suggested lodging sites where you can share options and offers to ride-share and/or cost-share.