

### University of Wisconsin Stevens Point

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# AQUACULTURE LEARNING PATHWAYS

## WHAT IS AQUACULTURE?

Aquaculture (fish farming) is a transformational global agriculture business practice that range from home-food production to large-scale commercial food-fish businesses. Aquaculture is the science of fish farming, and is a growing sector of agriculture.

During the last 20 years, the commercial culture of food fish in the U.S. has increased at an annual rate of over 15%, making it the fastest growing sector of food production in the country. In 2013, global seafood production surpassed beef production. Currently over 50% of world's seafood comes from aquaculture. The United States produced \$1.5 billion worth of aquaculture seafood in 2018.





# WHY STUDY AQUACULTURE?

The "Blue Revolution" has progressed so that water recirculating production systems, found in aquaculture, are the future, since they conserve natural resources while producing dietary protein with the lowest feed conversion ratio. Harvest of wild-caught, ocean fish plateaued over a decade ago so any increases in production of protein-rich food-fish must come from farms. When grown in sustainable, economical, and ecologically responsible manners, farm-raised fish can provide the least-cost form of dietary protein.

Enrollment in college agriculture programs has increased 40% since 2004 as demand for a skilled workforce has exceeded supply and consumers have shifted priorities to food safety, locally-grown, and sustainable practices.

Careers in aqua-businesses and personal food production systems need well educated individuals that are trained in multidisciplinary fields in science, technology, engineering and math to successfully advance these agricultural sectors.

### CAREERS IN AQUACULTURE

Aquaculture is a multidisciplinary field that has applications in many different professions. University of Wisconsin-Stevens Point graduates have advanced into a wide variety of careers that include:

- Fish culturists/Hatchery managers
- Water quality scientists
- Angling & lure manufacturing
- Veterinarians
- Aquaponics technicians
- Natural resource professionals
- Zoo and aquarium caretakers
- Private, state, federal and Tribal hatchery technicians



### AQUACULTURE LEARNING PATHWAYS

The University of Wisconsin-Stevens Point offers several learning pathways tailored to fit the interests of traditional students, post-graduates, professionals, veterans, and those wanting to continue their education in the field of aquaculture. Opportunities exist for students to earn academic credit applicable towards the aquaculture minor and degree programs. Students have the option to take courses for academic credit or non-credit to help meet their personal learning objectives.

Learning pathways include:

- Aquaculture Minor (credit)
- One semester online courses (credit & non-credit)

Aquaculture is multi-disciplinary and satisfies a wide variety of professional pursuits. To enroll in the Aquaculture Minor contact the Department of Biology at (715) 346-2159 or email: biology@uwsp.edu



## AQUACULTURE MINOR

The aquaculture minor is available to students enrolled at UWSP. Aquaculture/Fish culture is the discipline that studies the culture of finfish, methods of production, environmental and ecological manipulation and assessment, selective breeding, nutrition, diseases, processing, marketing and operation of culture facilities.

To enroll, visit the Department of Biology and complete a Major/Minor enrollment application.

#### CORE COURSES (16-17 credits)

- Biology/Water 386. Fish Culture. 3 cr.
- Biology 374. Ichthyology. 4 cr.
- Biology 375. Fisheries Ecology. 3 cr. OR Water 388: Aquatic Ecology. 3 cr.
- Water 390. Water Chemistry & Analysis. 4 cr. OR Water 382. Water & Wastewater Treatment. 3 cr.
- Business 320. Principles of Management. 3 cr.

#### **ELECTIVE COURSES** (minimum 10 credits)

- Biology 333. General Microbiology. 4 cr.
- Biology/Water 338. Phycology. 4 cr.
- Biology/Water 361. Aquatic Invertebrate Zoology. 3 cr.
- Biology 362. Animal Parasitology. 4 cr.
- Biology 380. Introduction to Aquaponics. 3 cr.
- Biology 499. Internship in Biology. 1-4 cr. OR Water 381. Internship in Water Resources. 1-4 cr.
- Water 384. Life History of Fishes. 3 cr.
- Water 488. Aquatic Insects. 3 cr.
- Water 494. Environmental Toxicology & Risk Assessment. 3 cr.
- Wildlife 360. Wetlands Ecology & Management. 3 cr.
- Wildlife 322. Techniques of Captive Wildlife Management. 2 cr.
- Business 330. Principles of Marketing. 3 cr.

#### ENROLL

**DEPARTMENT OF BIOLOGY** PHONE: 715-346-2159 FAX: 715-346-3624 E-MAIL: BIOLOGY@UWSP.EDU

### PROGRAM BENEFITS



#### PROFESSIONAL CREDIBILITY

Earning your Aquaculture Minor makes a statement. It demonstrates your commitment toward the aquaculture professions and proficiency in sustainable, locally grown food production from a world-class, accredited institution. The Aquaculture Minor is prominently displayed on the University of Wisconsin-Stevens Point official transcripts.



#### ACADEMIC LADDERING

Make your credits work for you. Should you decide to continue your education, the credits you earn through the aquaculture pathway can be applied to the University's degree-granting program.



#### ACCESS TO RESOURCES

Once enrolled in the aquaculture program, you have access to the significant academic and technological resources of the University's Northern Aquaculture Demonstration Facility. Additional benefits include:

- Career Services assistance
- Support from outreach services
- Internship opportunities and research experiences (see UWSP NADF below)
- Attendance and presentations at professional conferences and symposia

### NORTHERN AQAUCULTURE DEMONSTRATION FACILITY



The UWSP-Northern Aquaculture Demonstration Facility is a world-class applied research, demonstration, education and outreach center located in Red Cliff, WI on the Bayfield peninsula. UWSP undergraduates have the opportunity to apply for summer internship experience at the facility where. This unique experience engages students in current aquaculture research as well as teaches best management practices and commercial scale aquaculture demonstration. For more information contact UWSP NADF Director, Chris Hartleb: chartleb@uwsp.edu



#### COMMERCIAL SCALE

The facility operates commercial scale systems for research and demonstration to raise a variety of cool and cold water species including walleye and Atlantic salmon. Students have the opportunity to raise these species at various life stages from egg to broodstock in systems such as ponds, raceways and recirculating systems.



#### STAFF EXPERTISE

Students have the opportunity to learn about a number of aquaculture topics and practices from expert staff at the facility. Combined, the facility has nearly 100 years of staff aquaculture expertise.



#### HANDS ON EDUCATION

The facility is one of a kind in the Midwest and joins only a handful in the country that offer similar research, demonstration and educational capabilities to students. The internship opportunity provides students with an incredibly unique applied education and hands-on experience.