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**Bright futures in freshwater**

### **New course will expose students to water careers, tackling contamination issues with hands-on field and lab experience**

Written by UW-La Crosse University Marketing & Communications

Wisconsin is fortunate to be rich in water resources, from the shores of the Great Lakes in the east to the mighty Mississippi River in the west. This abundance of rivers, lakes and streams supports a way of life centered around fishing, hunting and outdoor recreation — industries that contribute billions of dollars annually to the state’s economy.

But these natural treasures face growing threats.

“We want to protect these water resources from things like invasive species and environmental contaminants,” says Tisha King-Heiden, professor of biology at UW-La Crosse. “Sustaining wild fish populations means understanding the impacts that pollutants have on fish, aquatic invertebrates and plants — because plants feed invertebrates, and invertebrates feed fish. It’s all connected.”

To address these challenges and prepare the next generation of scientists, King-Heiden has received grant funding from the [Freshwater Collaborative of Wisconsin](https://freshwater.wisconsin.edu/) to develop a new course focused on water quality and aquatic toxicology. The course will combine online instruction with hands-on field and lab components, equipping students with technical skills, professional experience and exposure to water-related careers — all essential for Wisconsin’s water future.

**A statewide effort to strengthen water education**

King-Heiden’s course is part of a broader $2.4 million grant coordinated by Rebecca Klaper, UW-Milwaukee Dean of the School Freshwater Sciences. The six-year grant will build capacity for water-related careers and research across the state through new university courses, outreach to recruit high school students, and expanded internship opportunities for undergraduate students. Partners on the grant come from diverse Universities of Wisconsin institutions, including UW-Eau Claire, UW-Green Bay, UW-Madison, UW-Oshkosh, UW-Parkside, UW-Stevens Point, UW-Whitewater, and UW-La Crosse.

**A hands-on learning experience**

King-Heiden’s contribution to the project builds on an introductory course in water pollution she co-developed with Elisabeth Harrahy (UW-Whitewater) and Mike Carvan (UW-Milwaukee). Now, the team aims to make the introductory, online course permanent, and expand it to include a summer hybrid course, including online content combined with summer field and lab experiences.

The course will be offered for the first time at UWL in summer 2026 or 2027. It will be open to students across the Universities of Wisconsin, though it will be hosted on the UWL campus.

“UWL students are strong participants in summer courses and research, so we’re hoping to recruit locally as we launch,” King-Heiden says.

At UWL, students will gain valuable field experience aboard the university’s [Research Vessel Prairie Springs](https://www.uwlax.edu/news/posts/ready-to-make-waves/), where they will collect environmental samples for toxicity testing with aquatic invertebrates and fish embryos. They'll gather invertebrates from streams and rivers, learning field techniques that are directly applicable to careers in aquatic ecology and toxicology.

In the lab, students will analyze their samples through a range of tests — from behavioral assessments to molecular assays — offering a comprehensive look at how environmental contaminants affect aquatic life.

“We want students to understand the full picture — from field collection to lab analysis,” says King-Heiden. “They’ll also gain experience working in teams, managing experiments, and communicating results — skills that are just as important as technical training.”

**Career preparation and exposure to real-world issues**

The course aims to introduce students not only to the science of aquatic toxicology, but also to the career opportunities it presents — particularly in Wisconsin. Toxicity testing, for example, is a key area of employment in the state. Organizations like the [Wisconsin State Laboratory of Hygiene](https://www.slh.wisc.edu/) generate data used by the Department of Natural Resources to establish water quality standards.

“These are great jobs that many students haven’t heard about,” King-Heiden says. “There are very few undergraduate toxicology programs, and most of this training happens at the graduate level. This course gives students an earlier entry point.”

The curriculum will cover both legacy contaminants like lead and mercury, as well as emerging threats such as PFAS and neonicotinoids — chemicals that are widespread in the environment but not yet fully understood in terms of their long-term impacts on fish and human health.

“A lot of our students are also interested in healthcare careers,” King-Heiden adds. “Understanding how environmental toxicants contribute to disease helps them see how this work connects to human health as well.”

**Building a statewide network of water scholars**

In addition to King-Heiden’s course, fellow UWL biology faculty member Ross Vander Vorste received Freshwater Collaborative funding to launch a new River Studies Field Course. This immersive program will provide 10–20 undergraduates—known as River Scholars—with the opportunity to explore Wisconsin’s major water challenges.

Over the course of a three-day canoe trip, students will gain skills in river navigation and safety, teamwork, and problem solving. They will participate in a diverse set of instructor-led field lessons and meet industry, non-profit and agency professionals that will introduce them to careers from a variety of freshwater disciplines.  The program culminates with a day on the Research Vessel Prairie Springs, using state-of-the-art river research and monitoring equipment.

**Creating pathways for students to say in Wisconsin**

Ultimately, the goal of these programs is to inspire students to pursue water-related careers right here in Wisconsin.

“Students care deeply about the environment and about contamination issues,” says King-Heiden. “But until now, there hasn’t been a clear undergraduate path into aquatic toxicology. This course helps fill that gap.”

And in a field where the problems aren’t going away anytime soon, there’s no shortage of work to be done.

“Jobs in aquatic toxicology are exciting because you're never doing the same thing twice,” she says. “I hope this class helps students get just as passionate about this work as I am.”