




WATER POWERS

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Water powers the American West. That's abundantly evident in Utah — mountain snow fuels a billion-dollar ski industry in the winter and fills our reservoirs in the spring. Utah's capital is named after the lake that collects Wasatch Front snowmelt at the end of its journey from the mountaintops.

To help more people become qualified to study and manage water issues, the University of Utah is offering a new graduate certificate program in hydrology and water resources. Provided a few prerequisites are met, all are invited to apply, including working professionals.

"There are relatively few of these programs for working professionals to come in and supplement their degree," says Paul Brooks, professor in geology and geophysics. "This program provides training that will help them advance in their career. That's a big unmet need."

What does a hydrologist do?

Hydrologists study how water moves through the water cycle, and in a desert state like Utah, their expertise is critically important to maintaining sustainable and safe sources of water. Hydrologists study regular events such as rainfall, snowmelt, groundwater withdrawals or streamflow as well as extraordinary events such as floods and droughts to help water managers in the future.

When a strong thunderstorm dragged through Salt Lake City on July 26, it left behind flooding in the Sugar House neighborhood that impacted homes, schools, and TRAX lines. At first glance, the mechanisms of a flood seem simple. Rain falls, water rises. But there's more to it. How does the rain interact with soils, rivers or groundwater? How fast do floodwaters rise? How fast do they fall and where does that water end up? The answers to these questions impact decisions on how to mitigate future floods while maintaining water quality downstream.

Hydrologists are also key to Utah's ski industry. Because of ski resorts' need for water to make snow, the resorts need to study their impacts on water quality and availability downstream.

"This program provides a solid foundation in climate, precipitation and weather, in surface hydrology, subsurface hydrology and chemistry," Brooks says. "All of those slices together."

How the program works

People from any educational background are invited to apply, providing they have completed prerequisites in physics and calculus. Applications are rolling, meaning they can be submitted any time between Aug. 1 and Nov. 1 for fall admission and Jan. 15 through March 15 for spring admission.

Students take a core curriculum of three classes, one of which is a seminar designed to help bridge the academic and professional water resource communities. The seminar reflects the value of bringing together current university students with working professionals in this certificate program.

“We want to mix practitioners with people who think about research and develop theory and basic understanding,” Brooks says. “That seamless integration is all too rare.”

Students then take three elective classes, no two of which can be from the same academic department. The classes include topics ranging from snow and ice to stormwater management to water law. Upon completion, students will have completed the educational requirements for a [professional hydrologist \(http://www.aihydrology.org/hydro-certification.html\)](http://www.aihydrology.org/hydro-certification.html) certification from the American Institute of Hydrology.

“The biggest benefit in having a hydrologist certificate is knowing the tools that are available in the toolbox,” says Benjamin Rood, a water resources engineer with AECOM in Salt Lake City. “The certificate doesn’t mean you are the expert at all of the tools but you know what tools are available and how to apply them to a specific project or analysis.”

Rood says hydrology calculations are an integral part of his water resources designs, particularly rainfall runoff and snow melt modeling. Training in those skills would help a job candidate stand out in his industry. “Being trained as a hydrologist will allow a candidate to show their qualifications for a job exceed other candidates based on their certificate,” Rood says.

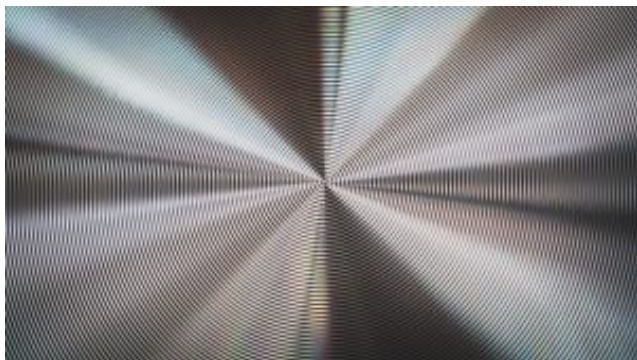
U’s expertise in water

The graduate certificate program builds on the wide water expertise already at the U, uniting researchers from across campus. By Brooks’ estimation, more than 200 faculty at the U have some component of expertise in water.

The multi-college program is hosted by the Global Change and Sustainability Center (<https://environment.utah.edu/>), which helps to facilitate interdisciplinary environmental research and graduate training programs. It also builds on the relationships built through the iUTAH program, an interdisciplinary partnership between Utah’s universities to study the water issues pertinent to the state. This allows students at the U, Utah State University and Brigham Young University to access expertise on all three campuses, Brooks says.

The hydrology certificate program is now accepting applications. Click [here](https://environment.utah.edu/hydro-certificate/) (<https://environment.utah.edu/hydro-certificate/>) to learn more.

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