SPATIAL STUDIES
AT UNIVERSITY OF REDLANDS

DEGREE PROGRAMS THAT ALIGN WITH GEOSPATIAL WORKFORCE NEEDS

The University of Redlands—a private, nonprofit university in Southern California that enables students to pursue their passions and potential—offers spatial studies leading to the following degrees:

- Master of Science in Geographic Information Systems (GIS)
- Master of GIS
- Spatial Studies Minor
- MBA with GIS emphasis

Since 2002, more than 300 alumni have graduated from U of R's GIS master's programs. The MS GIS program is accredited by the United States Geospatial Intelligence Foundation.

The Spatial Studies Minor is the largest academic minor on the Redlands campus, with approximately 50 students.

SPATIAL THINKING ACROSS THE CURRICULUM

Nearly 50 spatially relevant courses are offered across the University's curriculum—not only GIS foundation and advanced classes, but also multidisciplinary offerings such as Environmental Chemistry, GIS for Marketing, Mapping Animals, Mapping African History, Marine Biology, Political Geography, Mapping People/Mapping Place, Mapping Holocaust Memoirs, and World Religions.

Project-based spatial courses such as Environmental Design Studio, GIS Strategy: Concepts & Implementation, and Applied Mapping challenge students to further their GIS skills and develop professional competencies while helping real clients make spatial decisions.

SPATIAL STUDIES HUBS AT REDLANDS

- **The Center for Spatial Studies** helps integrate spatial thinking and technologies into instruction, research, administration, and service throughout the University, as well as supporting faculty efforts to secure sponsored projects and involve students in applied spatial projects and internships.

- **The Center for Business GIS and Spatial Analysis** provides programming at U of R's School of Business that enhances and conveys knowledge in the field to help in decision-making and solutions to real-world problems.

- **The Institute for Spatial Economic Analysis (ISEA)** offers economic analysis and forecasts to decision-makers and news media on topics connected to the spaces people live in, such as employment and unemployment, housing, retail, logistics, and economic risk assessment.

- **UR Spatial GeoThinkers**, a recently inaugurated spatial club for undergraduate students, will collaborate with other chapters of the USAID-funded YouthMappers organization around the world to aid disaster-response and international development and conservation efforts.

ORIGINAL RESEARCH

Recent spatial projects conducted by faculty, students, and administrators include:

- Using drones to map Panama's Mamoní Valley Preserve, including factors relevant to conservation, such as watershed boundaries, stream courses, potential for carbon sequestration, and forms of land classification

- Measuring and mapping micropollutants called endocrine disruptors in Southern California and in the lakes of the High Sierras to determine how they are dispersed and deposited by wind, rain, and snow

- Creating a map of electoral districts for the City of Redlands that promotes compliance with voting rights acts, avoids litigation, and reduces gerrymandering

- Conducting multivariate and clustering spatial analyses to identify geographic characteristics of the digital divide in the United States and worldwide

- Connecting an alumni database with online GIS to facilitate planning of regional alumni events and other outreach services

- Integrating field research and smartphone app observations of citizen scientists to map marine mammal movements along the Southern California coast

- Measuring the impact of spatial thinking training interventions on K-5 students' computational thinking abilities and mathematical performance at a local elementary school

- Flying drones to map and create 3D representations of ancient village sites within the Hopi Reservation of Arizona

- Mining U.S. Census and economic data to predict and map job losses associated with automation across the United States

- Creating a University GIS that supports management of campus facilities and facilitates analysis of building space utilization, maintenance costs, lighting, emergency response scenarios, and public safety

- Analyzing geographic data to define areas of greatest need and availability of potential donors to determine the optimal location of a food distribution warehouse for a regional charity working to eliminate hunger and food waste in the Inland Empire of Southern California

- Supporting business location decisions by analyzing big data with new spatial visualization tools
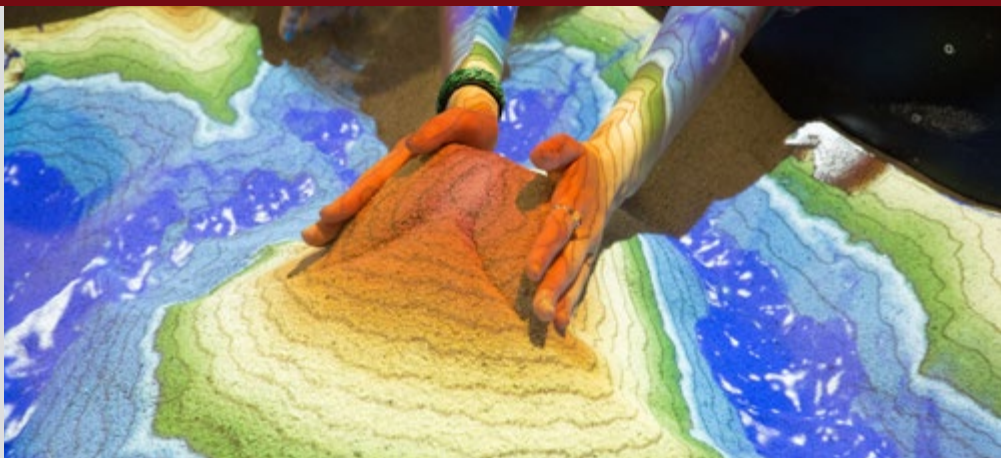
COMMUNITY-BASED SERVICE LEARNING PROJECTS

In addition to participating in faculty research, students have opportunities to engage in community service learning—from engaging middle-school students in mapping community assets to analyzing the spatial characteristics of environmental justice in the Coachella Valley. Students have presented their work at U of R's Spatial Research Symposium, the Los Angeles Geospatial Summit, and the international Esri User Conference.

CONNECTIONS WITH INDUSTRY LEADERS, INCLUDING REDLANDS-BASED ESRI

Internships, research, and employment are facilitated by U of R's strong relationships with geospatial industry leaders such as Esri, which collaborates with the University on GIS big data, planning, environmental, educational, and business projects (to name a few) and has employed hundreds of U of R graduates. This relationship also opens doors to Esri's business partners and product users:

- The City of Redlands, San Bernardino County, and other regional planning bodies

- Federal agencies such as the U.S. Forest Service, National Park Service, U.S. Fish and Wildlife Service, and U.S. Geological Survey

- Non-governmental organizations such as The Wildlands Conservancy, Big Bear Valley Education Trust, and Crafton Hills Open Space Conservancy

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"As a student at Redlands, I had experience as a GIS manager, working for government agencies, climate change analysis, and GIS data collection. All of those are part of what I'm doing in my work today."

— Jakob Larson '17
B.A. Environmental Business
GIS manager, The Wildlands Conservancy

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