College of Education Ph.D. candidate Darren Ripley ’94, ’00 M.A. has “flipped” the classroom model for his doctoral project. Ripley is the head of the mathematics department at the Davidson Academy of Nevada for profoundly gifted students.

Just a few years ago, graduation seemed light years away for College of Education Ph.D. candidate Darren Ripley ’94 (mathematics), ’00 M.A. (mathematics teaching). But in May, he will proudly cross the stage to accept his hard-earned doctoral diploma from the University of Nevada, Reno.

“I can’t wait,” says Ripley, head of the mathematics department at the Davidson Academy of Nevada on the University campus. “I remember when graduation was this little pin-prick of light. I couldn’t even see the end of the tunnel. Now all of a sudden I’m here.”

The University of Nevada, Reno offers 59 masters and 30 doctoral degree programs and counting. Bloomberg Businessweek has ranked Nevada’s part-time MBA program as one of the best in the country. Executive Vice President and Provost Kevin Carman says the programs will continue to strengthen and grow as the University reaches toward a “research university/very high” classification from the Carnegie Foundation for the Advancement of Teaching.

“The University is dedicated to excellence in original research, teaching, creative expression and intellectual leadership,” Carman says. “With a full breadth of master’s and Ph.D. opportunities and acclaimed faculty and facilities, students will find room to pursue educational and research pursuits in an accommodating environment that places a premium on academic excellence.”

The environment of northern Nevada—from the lake, to the mountains and the desert—allows both graduates and undergraduates to study issues that are characteristic to the area, but translate throughout the world.

“For instance, there are many places in the world where drought is a problem, so it puts us at the forefront, especially in the case of arid environments. Much of the research is showing that the world is going to become much drier, and of course some places are going to get wetter. We’re already dry here—we can do research to study the climate change coming in decades,” Carman says.

Built-in system of support

The graduate programs are also among the most affordable in the country, costing up to 80 percent less that other Tier 1 universities. Administrators are also working to strengthen the graduate assistantship program through grants and philanthropy.
“In order to attract outstanding graduate students, we have to provide competitive stipends,” Carman says. “We raised stipends each of the last two years and will continue working on this. We provide health insurance also, which not all universities offer.”

David Zeh, vice provost for graduate education and dean of the Graduate School, says the school’s mission is to “provide a 21st century graduate experience that values and promotes diversity, exploits the power and promise of technology, and prepares the next generation of Nevadans to help maintain the nation as the world’s leading economy, one that values initiative, hard work and personal integrity.”

Zeh says one of the distinguishing features of graduate education at the University is the large number of highly successful interdisciplinary graduate programs that span multiple colleges and schools, and, in some cases, institutions. The Graduate Program in Hydrological Sciences includes faculty members from the College of Agriculture, Biotechnology and Natural Resources (CABNR), the College of Engineering, the College of Science, the Desert Research Institute, and the U.S. Geological Survey. Similarly, the Molecular Biosciences Graduate Program is an interdisciplinary collaboration between CABNR, the College of Science and the University of Nevada School of Medicine.

“As a land-grant campus with a diverse mix of academic units and professional schools, we are uniquely suited to building strength and national competitiveness through collaboration,” Zeh says.

Graduate student support at Nevada extends beyond the laboratory, studio and classroom. The Graduate Student Association (GSA) works in cooperation with the Graduate School and individual academic departments on campus to enrich the graduate student experience.

“Graduate programs require rigorous commitment and dedication to your field of study while balancing life and all that falls under it,” says GSA President RJ Boyajian ’14 M.A. (political science). “This is where the GSA steps in. We do our best to help graduate students balance their academics and work with support from our programs and services. Whether it is help getting to a conference to present research, finding furniture, purchasing a new computer or providing networking socials, the GSA is there to help.”

The GSA’s largest programs include the travel grant and awards week programs, which together provide graduate students more than $300,000 in awards, Boyajian says. The GSA also represents graduate student interests at the department, University and Board of Regents levels.

The path to Ph.D.

From an intimate classroom at the Davidson Academy of Nevada, a free public school on the University campus for profoundly gifted students, Darren Ripley orchestrates an environment that is collaborative and engaging for his sixth-grade math students. As part of his Ph.D. dissertation, Ripley has employed a teaching technique called the flipped instructional method. In essence, the traditional classroom
Lecture and homework model is flipped: students perform the bulk of their work in the classroom and learn the next day’s lesson on their own at home. “Flipping is a relatively new pedagogical paradigm,” says Ripley, who has been teaching for 19 years. “The technical definition is that you take the content acquisition space, where the students gain information and knowledge, and you take that from the group space and you move it to the individual space.”

He was inspired by a TED Talk by Salman Kahn of Kahn Academy, a nonprofit that provides free educational resources online. “Technology has given us the ability to take our content and lectures and publish them online, rather than deliver it to a bunch of glassy-eyed, one-size-fits-all lecture style to these kids, who may or may not be ready for it or be in the right head space to learn,” Ripley says.

“So rather than lecture at my students for an hour in the classroom and then they go home and flail around with the mathematics problems unassisted, they are working on assignments in class and their homework is watching the lectures, reading and doing a few practice problems,” Ripley says. “My classroom becomes open access—they have access to resource books, access to the teacher and to one another. I love it. Then I work in a more tutorial fashion and walk around and give help to students who need it.”

“One of the coolest byproducts of it is that it gives me the opportunity to not only help my students where they’re having a problem—immediately and in real time—but it also gives me the ability to give them feedback on the work they produced,” Ripley adds. “I can grade their work, have it back to them and have conferences with them right then, rather than waiting for the work to be turned in several days later and grading it without the student present.”

Working in concert with the Washoe County School District, Ripley is checking to see if there are significant differences in performance outcome as defined by the sixth-grade math CRT for students at Title I schools who have received a flipped learning experience versus those who have not.

When he earns his Ph.D. this spring, Ripley will receive his third degree from the University. The Davidson Academy allowed him to reduce his full-time teaching schedule to 80 percent so he could complete his dissertation. “The Davidson Academy has bent over backwards to make sure I’m successful and give me the resources necessary for me to be successful,” Ripley says. “Dr. (Leping) Liu, my graduate advisor, has also been unbelievably helpful in this process.”

Dignity in dying

In the Master of Social Work program, Morgan Nazemian ’10 (human development), ’14 (social work) is instrumental in helping the University meet its goal to integrate into the community by partnering with agencies to directly impact the health and welfare of vulnerable clients and patients. As an intern at Infinity Hospice Care, Nazemian was asked to create a volunteer program that addresses the...
social problem of patients dying alone. Wanting to look at the big picture, she took a step back and began to examine death in general. “Some people will always be afraid of death, but the source of their fear shouldn’t be about being alone,” Nazemian says. “A ‘good death’ may mean something different to each and every person, and that is why this program is so important. Nobody knows how to die, because there is no right way. But whatever your way is, there should be the availability to have somebody by your side.”

Nazemian has set out to create evidence-based training for volunteers to support hospice patients through their final hours. By collecting data from other hospice agencies, she is preparing a pilot program for Infinity Hospice Care.

“My graduate courses, particularly social work practice and program evaluation, have directly prepared me to develop and evaluate this program and training,” Nazemian says.

Master of Social Work Program Coordinator Gloria Messick Sware notes that the profession of social work recognizes the bachelor’s in social work as the entry-level degree, the master’s in social work as the terminal practice degree, and the Ph.D. as the research degree. With a master’s degree, social work graduates provide leadership in a variety of teams and venues, such as community prevention and advocacy, supervisory and administrative roles in child welfare, aging services and behavioral health. With additional work leading to a clinical license, master’s graduates can practice independently as psychotherapists.

“The master’s degree combined with the clinical social worker license opens many additional employment opportunities in mental health and behavioral health settings,” Messick Sware says. “The largest single employer of social workers, the Veterans Administration Medical Centers, only hire social workers with an MSW who have or are working toward their clinical license.”

**Breaking down barriers**

Marcela Loria-Salazar ‘13 M.S. (atmospheric science) is a second-year Ph.D. student in the Atmospheric Sciences Interdisciplinary Graduate Program offered through the University’s Department of Physics in partnership with the Desert Research Institute’s Division of Atmospheric Sciences. Marcela has been working in the Atmospheric Turbulence and Air Quality (ATAQ) research group with Assistant Professor Heather Holmes since June 2014. In the
ATAQ group, she has been able to incorporate the experimental work she did as a master’s student with Professor Patrick Arnott into a spatial investigation of wildfire smoke plumes in California and Nevada. Her current work focuses on satellite remote sensing and the ability to measure near-surface air pollution downwind of wildfires.

Loria-Salazar presented her work at the American Geophysical Union annual meeting in December, showing results for the American and Yosemite Rim fires from August 2013. Her research has impacts on climate modeling, remote sensing and human health assessments. Her future research will include statistical and numerical modeling to simulate wildfire smoke plumes and their impact on urban populations in California and Nevada.

“My long-term goals are to teach general audiences how air pollution can diminish health, ecosystems and air quality,” Loria-Salazar says. “I want to continue with a career in academia and mentor students about how the atmosphere works and help them to understand that science is not an intimidating field.”

Loria-Salazar also aims to mentor women in the field of science.

“I really want to be an example for younger women and demonstrate that they can achieve their goal in any field without feeling undermined or losing their identity by the heavy presence of men in the science fields,” Loria-Salazar says.

“She is an extremely curious researcher, always asking difficult scientific questions and wanting to learn more about her field,” says Assistant Professor Heather Holmes, Loria-Salazar’s graduate advisor. “She also has a passion for communicating her results to others and teaching people about air pollution, weather, climate and how we as humans interact with the environment.

“In addition to her research, Marcela is a very active mentor for undergraduate students in the ATAQ lab and for both undergraduate and master’s students in the Atmospheric Sciences program,” Holmes adds.

Graduate assistantships help offset cost of advanced degrees

The Graduate School at the University of Nevada, Reno is among the more affordable options for advanced-degree education in the country. Even further, there are a number of opportunities at the University of Nevada, Reno to help graduate students offset tuition and living expenses.

Graduate assistants perform a variety of duties from teaching undergraduate classes to grading papers and conducting research in laboratories. Teaching assistants receive special teaching-skills training through the Graduate School.

To be eligible for an assistantship, students must be admitted to a degree-granting program and be in good academic standing. The student must have an overall GPA of at least 3.0 and must be continuously enrolled in at least six graduate level credits throughout the duration of the assistantship. These positions are offered through various departments and are paid by grant, state or foundation funds and private philanthropy. Students interested in these positions must contact the department for specific requirements.

To learn more, visit www.unr.edu/grad/funding/graduate-assistantships.
to make touchscreen devices accessible to users who are blind.

Currently, adaptive techniques for drawing geometric shapes on tablets are limited to raised-line drawing kits, pins and rubber bands, verbal descriptions with sighted assistance or printed Braille diagrams.

“These techniques are expensive, time consuming and difficult to learn,” says Grussenmeyer, who is legally blind. “I am exploring whether accessible gesture-based techniques allow for blind students to draw geometric shapes on tablet devices.”

Grussenmeyer moved from the Sacramento area to pursue his Ph.D. at Nevada under the mentoring of Associate Professor Eelke Folmer, who has performed groundbreaking work on adaptive technologies for the blind. In 2013, Folmer won a competitive Google Research Award for his proposal, “An Indoor Navigation System for Blind Users using Google Glass.”

“My ultimate goal is to make people’s lives easier who are blind, especially using touchscreens,” Grussenmeyer says. “They are really new and very useful, and they make life easier for people who are blind.”

Last summer, Grussenmeyer received a $10,000 Google Lime scholarship for students with disabilities. His advisor, Folmer, along with other teachers in the Department of Computer Science and Engineering, wrote letters of recommendation.

“Google also invited us to visit their campus for four days and talk to people there,” he says. “We also participated in a hack-a-thon. It was really fun.”

Ruchi Gakhar holds an undergraduate and master’s degree in chemistry and an additional master’s in nanotechnology. Her research involves the use of nanotechnology—the study and application of extremely small particles that can be used across all the other science fields, such as chemistry, biology, physics, materials science and engineering—to create new, affordable materials to harness solar energy for clean energy production.

“I always wanted to work on something that is environmentally friendly,” says Gakhar, the author of eight journal publications. “Renewable energy, such as solar and hydrogen from water, are enormous sources of clean energy. We get a lot of energy from sun every day; we just need the right materials that could efficiently collect that energy and convert it into a useful form. There is a lot of science that needs to be done in this field. There are some materials that have been developed, but they are very costly and not very stable. We really need to develop newer materials or modify the existing ones to address these issues.”

Gakhar says the research facilities at the University are well-equipped to accommodate her research, and the professors are supportive.

“The programs here are truly good,” says Gakhar, who works as a graduate assistant in the Materials and Electrochemical Research Laboratory, which is outfitted with more than $2 million in research equipment and is home to 12 graduate students and postdoctoral researchers. “At the lab, we have almost everything we need. We have so many instruments here that allow us to conduct cutting-edge
materials research without having to travel to other facilities. My advisor, Associate Professor Dev Chidambaram, not only guides us by having timely discussions, but also provides us with the freedom to think and work independently. It’s the perfect combination of how you want to work as a Ph.D. student.”

**Flexibility for families**

Amy Ghilieri ’10 M.A. (history), a Ph.D. candidate at the Department of History, is working on a dissertation that traces the bibliographic and cultural legacy of a 16th century witchcraft manual titled *De lamiis et pythonicus mulieribus.*

As the first illustrated book on witchcraft ever published, the text was an instant success and helped create the image of the witch in the early modern period. Ghilieri has located 334 surviving copies of the book and has consulted 98 of those copies. Comparing the books to one another, Ghilieri has broken them into 34 unique editions published between 1489 and 1669. The shift in content and appearance of these books suggests that the text took on a life of its own, with each subsequent publisher altering the content and layout of the book in an attempt to increase sales.

For her work, Ghilieri was the recipient of the 2014-15 Russell J. and Dorothy S. Bilinski Dissertation Fellowship. She was invited to present her dissertation at the Sixteenth Century Society in New Orleans in October.

Ghilieri appreciates the interdisciplinary nature of graduate studies at the University. "I have been able to take so many classes in other departments,” she says. “In fact, later today I am going to go bug someone in the English department because I need a reference for medieval disputation, and someone will probably let me know the right book for that.”

As a parent, Ghilieri says it would have been difficult to complete her studies at a larger university. “I think there’s a flexibility here that you just don’t have anywhere else,” Ghilieri says. “I have a small child; I can’t move to Italy or Germany for a year to do archival research, and people were willing to work with me on that. It’s also a small community here. There can be drawbacks to that, but I wouldn’t have been able to go to a huge school with a small child and expect to have the kind of flexibility I’ve been given here at Nevada. It just never would have happened.”

“Thank you, Nevada,” Ghilieri adds, exhaling.
Optim founders support the next generation of scientists at Nevada

As graduate students at the University of Nevada, Reno, Bill Honjas ’93 M.S. (geophysics) and Satish Pullammanappallil ’94 Ph.D. (geophysics) formed Optim, a company that produces software and provides services to the geophysical, geotechnical, engineering and geothermal communities. The company began its life on the University campus under the auspices of the Nevada Applied Research Initiative, and has since grown to include offices in Reno and Las Vegas.

As the company continues to expand, both Pullammanappallil and Honjas have made it a priority to give back to the University of Nevada, Reno. Since 2009, Optim has supported the Optim Graduate Fellowship in the College of Science, which provides fellowships every year to University graduate students conducting research in the area of geophysics.

“Our motivation to start the Optim Fellowship was to give back to the University,” Pullammanappallil says. “What better way to do that than to fund motivated students as they work towards their graduate degree? Having been graduate students, we know being able to concentrate on research without having to worry about finding a source of funding can be a big plus. Industry benefits from the research carried out by the students and so does Optim as we are able to keep abreast of the latest developments in our field of interest as well as be involved in cutting edge research.

“We felt the fellowship was a way to attract bright undergraduates to come to the University for graduate school,” he adds. “We compete with schools like Stanford, the University of California schools and the Colorado School of Mines. Offering qualified students an incentive has, I believe, proven to be effective in them choosing Nevada.”

Geophysics Professor John Louie says Optim’s gifts have supported graduate students in the Seismological Lab for several years, including full stipend and tuition support for the Optim Fellows. In recent years, the gifts have also provided partial support for all grad students in the lab, particularly for the “student responsibility” portions of course fees and other fees.

“Optim’s support has been crucial in our ability to attract top-quality students to our graduate programs and graduate them in a timely way,” Louie says.

The current Optim fellow, Kyle Basler-Reeder, says the fellowship has given him the opportunity to pursue a geophysics graduate degree in the setting of his choice, as well as access to the University’s Technology Transfer Office, which provides a quick and easy avenue to commercialize software.

“I have been able to pursue my degree in the fascinating geologic setting of the Walker Lane,” says Basler-Reeder, who completed an internship with ExxonMobil, where he was offered a full-time position following graduation. “The fellowship further incentivizes potential students by offering the freedom to choose their research topic and a monthly stipend that is competitive on the international level. I personally opted to accept the fellowship for a chance to work with Satish on technology that could potentially be utilized by Optim in the future. It has been very rewarding to work with him. Satish brings a real-world perspective to my project that makes it a lot more than just an academic pursuit.”

To learn more about supporting the College of Science, please contact Char Hagemann, director of development, (775) 682-8791 or chagemann@unr.edu.

—Roseann Keegan