UNLV Attains Highest Status as Research University

UNIVERSITY JOINS THE RANKS OF JUST 130 INSTITUTIONS NATIONWIDE CLASSIFIED BY CARNEGIE AS “VERY HIGH RESEARCH ACTIVITY” – R1 – THE GOLD STANDARD FOR UNIVERSITY RESEARCH METRICS.

UNLV’s drive to rise among the nation’s top public research universities took a major step forward this year when it was elevated to R1 “very high research activity” status by the Carnegie Classification of Institutions of Higher Education.

R1 is the gold standard for university research classifications, and out of 4,000 institutions nationwide, UNLV now is one of just 130 with the distinction. UNLV had been classified as “high research activity,” or R2, in Carnegie’s last update in 2015.

The news comes as UNLV continues to press forward on its Top Tier Initiative, a campus wide strategic plan to join the ranks of the nation’s top public universities in research, education, and community impact by 2025. This plan includes earning the top classification by Carnegie.

“This achievement is validation of the commitment and efforts of many individuals, and a step along our journey for UNLV to be the very best it can be,” said UNLV President Marta Meana. “Reaching the highest Carnegie classification is years in the making and will have a wide-ranging impact from recruitment of top faculty and students, to broadening our research efforts, to attracting new businesses that will boost economic growth in our state. This is a proud day for UNLV and the community, and we will continue our meaningful work in Southern Nevada and beyond.”

According to Carnegie’s classification website, data from the National Center for Education Statistics and National Science Foundation (NSF) surveys is pulled to determine the classifications. The organization calculates research activity in a variety of categories, including but not limited to doctoral degrees granted, NSF-reported research expenditures, and the number of post-doctoral and non-faculty researchers.

NSF-reported research expenditures are on the rise at UNLV, from $42 million in fiscal year 2015 to $66 million in 2017. The university has also grown its doctoral programs across the disciplines and is awarding more doctoral degrees overall, moving from 124 research doctoral degrees in 2013-14 to 162 degrees in 2017-18.

“We could not have reached this major milestone of our Top Tier strategic plan without all the hard work, dedication and ongoing collaboration among our college deans, chairs, faculty, and staff,” said UNLV Provost and Executive Vice President Diane Chase. “It is a testament to the spirit of our UNLV faculty, staff and students whose creativity and innovation drive so much of our research.”

The Carnegie Classification has been the leading framework for classifying the research activities of colleges and universities in the U.S. for more than 40 years. The first classification was published in 1973, nearly 20 years before UNLV awarded its first Ph.D. in English in 1991.
UNLV’s first Carnegie designation was earned in 1987, when it was classified as a “Comprehensive I” institution, recognizing its offering of graduate education through master's degrees. Seven years later, UNLV was reclassified as a “Comprehensive Master’s-granting University,” with more than 40 master’s degrees, and earned a “Doctoral/Research University-Intensive” designation in 2000.

Since 2000, UNLV has greatly expanded its graduate degree programs campus wide, which includes a School of Dental Medicine and the Boyd School of Law, both firsts for Nevada, and a School of Public Health. UNLV awarded 171 professional practice degrees – in law and dental medicine – last year, with those numbers expected to rise with the 2017 launch of the UNLV School of Medicine.

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One of the richest sources of employment and economic growth is, and will continue to be, jobs in STEM – Science, Technology, Engineering and Math. A few reasons young adults don’t pursue STEM careers include not knowing much about the fields, or feeling that they aren’t prepared enough to seek further education in these areas. The Howard R. Hughes College of Engineering is dedicated to working closely with our K-12 educational partners to help introduce STEM to younger students, and inspire them in all the opportunities it has to offer. From faculty hosting STEM-based summer camps focused on better academically preparing high-school students entering college, to students conducting hands-on activities in elementary school classrooms, the College is living its mission to Educate, Engage, Inspire and Innovate. Just a few examples of our recent endeavors are below.

STUDENT INTERACTIONS WITH SCIENCE, TECHNOLOGY, ENGINEERING & MATHEMATICS (SISTEM)

Through UNLV’s SISTEM program, high school students are introduced to various STEM careers and research through engaging guest speakers and hands-on activities. The program is open to all high schoolers, completely free, and provides participants the opportunity to not only hear directly from working engineers and scientists, but tour labs and get their hands a little dirty with in-class building projects.

Linda Hightower was excited that her freshman high schooler wanted to take advantage of the program, giving him the chance to venture out academically and see what it is that he really wants to do.

“I’m getting a good idea of what I like,” said Reid Hightower. “I’m more into engineering and maybe a little research. I think it (SISTEM program) will help other people too, not just me, find out what they actually want to do before they go into college.”

UNLV’s SISTEM program is led by Dr. Erica Marti in the College’s Civil and Environmental Engineering department, and is funded with a grant from the Nevada National Security Site (NNSS), managed and operated by Mission Support and Test Services (MSTS). SISTEM was initiated in 2016 under the NSF EPSCoR Nexus in Nevada grant.
MIDDLE SCHOOL VISITS ROBOTICS LAB
Team members of the Robert O. Gibson Middle School Robotics Team had the opportunity to visit UNLV’s Drones and Autonomous Systems Lab (DASL) as they prepared for the VEX Robotics World Championship. They tested their piloting abilities by navigating a drone through obstacles, had a Q&A session with Professor and renowned roboticist, Paul Oh, and even met Metal Rebel. Metal Rebel participated in the 2015 DARPA Robotics Competition where UNLV placed 8th in the world.

INTRODUCE A KID TO ENGINEERING DAY (IKED)
Taking place in February during National Engineers Week (EWeek), UNLV’s IKED event attracted more than 250 students throughout the greater Las Vegas Valley. The kindergarten through sixth grade students participated in a variety of hands-on activities such as building and launching bottle rockets, propelling an object with a catapult, and building an arch bridge, led primarily by members of engineering student organizations.

“This is a wonderful opportunity for kids to experience the challenges and excitement that engineering has to offer,” said Molly Marks, College of Engineering director of events. “And there is definitely a desire within the community for these types of events – both days were booked a month out thanks mostly to positive word-of-mouth recommendations by last year’s participants.”
When Bumps in the Road are a Good Thing

A NEW DYNAMIC RUMBLE STRIP SYSTEM ALERTS DRIVERS TO ROAD SAFETY CONCERNS WHEN THEIR EYES MIGHT BE WANDERING.

In a perfect world, drivers would pay careful attention to the road while behind the wheel. But too often, drivers are drawn to social distractions in spite of current safety measures and warnings. They veer in and out of lanes, run through stop signs and red lights, and cause crashes—too many of them fatal.

“If a person is distracted, it doesn’t matter if there are flashing lights at a crosswalk or if the arms are down at a railroad crossing,” said Steve Merrill, Nevada Department of Transportation (NDOT) location chief engineer. Just two brief seconds of looking away from the road can double one’s chances of a crash, according to the National Highway Traffic and Safety Administration.

Merrill recently teamed up with faculty from UNLV’s Howard R. Hughes College of Engineering to find a solution to the problem—one that is dynamic versus static, anticipated, or potentially ignorable.

The patent-pending Dynamic Rumble Strips system looks somewhat like a cattle guard. The strip remains flush with the pavement until activated, at which point it retracts into the ground to create a rumble effect for vehicles passing over it. The system is designed for travel lanes upstream of areas with known safety concerns or high pedestrian traffic, including busy intersections, school zones, and event venues. They can be activated in real time to respond to an area’s changing needs. Because the strips operate only when pedestrians need them, they gain drivers’ attention without risking desensitization to the presence of sound and sensation that permanent rumble strips create.

The National Safety Council estimates that 90 percent of motor vehicle crashes are caused by human error, including distraction by phone or fatigue, driving under the influence, and missing road hazards.

“Visual signals are by far the most common approach to alert drivers to take action, but distractions, fatigue, and low visibility warrant pursuing alternative mechanisms to regain drivers’ attention,” said UNLV Engineering Professor and Transportation Research Center Director, Brendan Morris. Morris is a member of the UNLV team which developed the system along with the college’s associate dean for research, Mohamed Trabia, and former UNLV engineering professor Alexander Paz.

After more than two decades as an NDOT engineer, Merrill knew the limitations of traditional rumble strips. The noise they create renders them unsuitable for residential areas. And with the threat of water pooling in the strips, they could ultimately lead to a degradation of the pavement or even cause crashes—the very thing they were created to prevent.

“It would be cool if when we need them, we have them, and when we don’t need them, the road could just be flush,” Merrill suggested to UNLV engineers, an idea that guided the philosophy behind the Dynamic Rumble Strips system.

The Dynamic Rumble Strips system is currently being field tested on Harmon Road, just west of Maryland Parkway. This site was selected because it is located on campus, allowing UNLV full control over the testing. There is also significant pedestrian traffic in the area that will benefit from having the retractable rumble strips installed upstream of a crosswalk.

After the testing stage is complete, the system will likely be ready for commercial development. It’s already been licensed by the Nevada-based startup Rebel Roadways Systems, formed by Richard Sloan, longtime seed-stage venture capitalist; company crafter; and co-founder of the popular multimedia company for entrepreneurs, Startup Nation.

“This project is highly rewarding since it is a solution designed by people working in the community, for the community. While my work often involves a lot of sensing, measurement, and analysis after the fact, Rumble Strips can help prevent safety incidents from ever occurring in the first place, and potentially save lives.”

Professor Brendan Morris

“Multiple factors drove my intense interest in the Dynamic Rumble Strip opportunity,” Sloan said. “It is a very important safety product that could save pedestrians’ lives. I also value the unusual degree to which the product has been prototyped, tested, and validated by UNLV. When you bring these virtues together with an urgent need in the marketplace for safety solutions in communities across the country, Rebel Roadway Systems becomes very viable and very compelling very quickly.”
The system holds promise beyond re-focusing drivers’ attention. Future applications for the technology could extend to autonomous vehicles, which could sense and respond to vibrations from the rumble strips as an additional failsafe in the event of other system malfunctions. And with more connected and autonomous vehicle technologies emerging, there is still going to be a need for dynamic safety solutions as long as there are still distracted drivers in control of cars.

“We’re a ways off before everything is really connected,” said Jim Hanson, director of intelligent mobility for Atkins Global Consulting, a global leader in design, engineering, and project management of intelligent transportation. He explained that it’ll take another 20 years for 95 percent of the current fleet to disappear. During that time, human-piloted automobiles will operate alongside autonomous ones.

“It’ll be several years before there’s a significant enough market penetration to actually effect a change in people’s behaviors, so it’s critical to find solutions that will help facilitate that transition,” he said. “That’s why we seek out solutions like the Dynamic Rumble Strips that can be implemented for 100 percent of roadway users.”

The project also earned support from the Nevada Governor’s Office of Economic Development (GOED) Knowledge Fund with which UNLV has an autonomous vehicle and mobility partnership with Germany’s Fraunhofer Institute for Transportation and Infrastructure Systems.

“The Dynamic Rumble Strips technology ticks all the boxes of Knowledge Fund requirements: UNLV’s Office of Economic Development has filed patent applications and is already working on technology commercialization through the formation of a startup with a local entrepreneur,” said Karsten Heise, Technology Commercialization Director for GOED. “In addition, the Dynamic Rumble Strips adds another component to the regional effort in the development of mobility technologies and autonomous vehicle infrastructure.”

Edited article originally written by UNLV’s Division of Research and Economic Development

**LINKS:**
- Startup Nation - https://www.nsc.org/road-safety/safety-topics
- GOED Knowledge Fund - http://www.diversifynevada.com

MEMBERS OF THE RUMBLE STRIPS TEAM STAND ON HARMON AVENUE WHERE THEIR SYSTEM HAS BEEN INSTALLED (LOWER LEFT). THE TEAM FROM LEFT TO RIGHT: BRENDAN MORRIS, ASSOCIATE PROFESSOR AND DIRECTOR OF THE UNLV TRANSPORTATION RESEARCH CENTER, CHRISTOPHER KAPPES, RESEARCH SCIENTIST FROM FRAUNHOFER IVI (GERMANY), AND TONY FILIPAK, MACHINIST.
To understand and work in blockchain, you have to have a good background in a variety of areas including computer science, cryptography, and computer networks, in addition to general software development experience. Students in UNL V’s Computer Science program get a strong education in all of these areas. 

Professor Yoohwan Kim

YOOWHAN KIM IS AN ASSOCIATE PROFESSOR IN COMPUTER SCIENCE AT THE UNIVERSITY OF NEVADA, LAS VEGAS (UNLV). HIS RESEARCH ON BLOCKCHAIN INCLUDES BLOCKCHAIN SCALABILITY, DATA PRIVACY ON BLOCKCHAIN, BLOCKCHAIN ARCHITECTURE, AND SMART CONTRACT APPLICATIONS. HE HELPS THE COMMUNITY TO LEARN BLOCKCHAIN TECHNOLOGY AND BUILD BLOCKCHAIN BASED APPLICATIONS.

With the expansion of blockchain into business applications, smart contracts and more, Kim believed the time was right for blockchain to enter into the UNLV curriculum. CS 789: Fundamentals of Blockchain Technology, is the first course in this cutting-edge technology being taught at the University. In the academic world, blockchain is still considered to be in its infancy, and few universities are offering classes in the new technology within their degree-seeking programs.

UNLV’s course covered a variety of blockchain topics such as cryptography behind blockchain, consensus algorithms, smart contracts, blockchain security, and scalability issues, as well as case studies on Ethereum and Hyperledger, and talks from industry experts. Students built decentralized applications as a class project on public and private blockchains.

“Blockchain technology has tremendous potential to change not just our business practices, but our society,” said Kim.

College of Engineering Offers New Blockchain Course

FROM CRYPTOCURRENCIES TO IOT DEVICE MANAGEMENT, PROONENTS OF THE TECHNOLOGY BELIEVE IT HAS THE POWER TO CHANGE EVERYTHING.

Although blockchain has existed for a decade, the technology has only come into the mainstream over the past year. Most notably in association with cryptocurrencies, and specifically with Bitcoin, the first application of blockchain.

Bitcoin is a digital currency, a token that can be used to buy, sell, invest, etc. Blockchain is a distributed ledger technology that enables the transferring of information, including cryptocurrencies like Bitcoin as well as other data, in a secure and transparent manner.

“Blockchain used to be just for cryptocurrency,” said UNLV College of Engineering Computer Science Associate Professor Yoohwan Kim. “But blockchain can offer something that existing systems cannot – trust. If you cannot trust other people, you can actually build the trust among multiple parties, and that’s what blockchain does.”

Instead of using a centralized system, blockchain transactions and data are validated by, and reside on, a distributed, peer-to-peer network. Once recorded, the information cannot be altered without consensus of that network, adding a layer of trust – not between individuals but in the system itself.

Proponents tout blockchain’s ability to provide greater transparency, enhanced security, improved traceability, increased efficiency, and even cost reduction. The technology is being explored to disrupt a myriad of traditional business models including healthcare, financial services, real estate, and more.

“Blockchain technology has tremendous potential to change not just our business practices, but our society,” said Kim.

“For understanding and work in blockchain, you have to have a good background in a variety of areas including computer science, cryptography, and computer networks, in addition to general software development experience. Students in UNLV’s Computer Science program get a strong education in all of these areas.”

Professor Yoohwan Kim
Recent Accolades

The College of Engineering is incredibly proud of all of the accomplishments of our faculty, students and alumni. Just a few recent examples are below.

**UNLV TO COMPETE IN 2020 SOLAR DECATHLON COMPETITION**
The U.S. Department of Energy Solar Decathlon competition challenges collegiate teams to design, build and operate solar-powered houses that are energy-efficient, affordable and attractive. UNLV has participated in two prior competitions in 2013 and 2017, and was one of just 11 universities worldwide chosen to compete in 2020.

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**UNLV ALUMNA APPOINTED NEW DIRECTOR OF THE NEVADA DEPARTMENT OF TRANSPORTATION**
Kristina Swallow, UNLV M.S. graduate in Civil and Environmental Engineering, was appointed by Governor Steve Sisolak as the new Director of NDOT. She previously served as President of the American Society of Civil Engineers (ASCE), only the fourth female president in the organization’s history.

**PROFESSOR’S GENCYBER PROGRAM FUNDED FOR 2019**
Computer Science Associate Professor Ju-Yeon Jo has received a hundred thousand dollar grant to host the GenCyber Summer Camp for a second year. The camp is free to participants and funded jointly by the National Security Agency (NSA) and the National Science Foundation (NSF). In 2018, UNLV was the only GenCyber Summer Camp in the state of Nevada.

**CONSTRUCTION MANAGEMENT STUDENTS WIN REGIONAL COMPETITION**
UNLV’s team of construction management students won first place in the Design/Build category at the 2019 Associated Schools of Construction (ASC) Regional Student Competition. Thanks to PENTA Building Groups for providing technical assistance and McCarthy for the financial support.

**UNLV’S QUORUM PROGRAMMING TEAM HONORED WITH AWARD**
Andreas Stefik, associate professor in computer science, and his team of undergraduate and graduate students, received the Computer Science Teachers Association (CSTA) and Code.org’s distinguished Expanding CS Opportunities Award. The award was given by Melinda Gates, co-founder of the Bill & Melinda Gates Foundation, and recognized the team’s work on creating the Quorum programming language for blind and visually impaired learners.

**DOCTORAL STUDENT NAMED UTC STUDENT OF THE YEAR BY U.S. DEPARTMENT OF TRANSPORTATION**
Blake Hament, a doctoral student and research assistant in UNLV’s Drones and Autonomous Systems Lab (DASL) was selected by U.S. DOT as their 2018 University Transportation Center Outstanding Student of the Year. Hament works with Paul Oh, Lincy Professor for Unmanned Aerial Systems at UNLV, on research for the INSPIRE University Transportation Center (INSPIRE UTC) which examines the inspection and preservation of infrastructure through robotic exploration.

**FACULTY’S NEW PATENT AIMS TO PROTECT AGAINST ELECTRONIC ATTACKS**
Electrical and Computer Engineering Professor Robert Schill was awarded a patent for “Auto-Triggered Methods and Systems for Protecting Against Direct and Indirect Electronic Attack.” Since plasma, at high enough density, can be used to disrupt a high power electromagnetic pulse or continuous wave, by controlling that density, one could prevent electronic attacks on battlefield equipment, industry equipment, or satellites protecting our cyber infrastructure.

**LINKS:**
Solar Decathlon - [https://www.solardecathlon.gov/](https://www.solardecathlon.gov/)
ASC Competition - [https://www.asc67.org/](https://www.asc67.org/)
Focus on Engagement, Retention & Graduation

There’s no way around it, engineering is a challenging field, and attrition rates in college can be higher than in other disciplines. There’s a myriad of reasons for students leaving their engineering major, and the College of Engineering is tackling it on all fronts. From working with our local school district to help students be better prepared for the rigors of their chosen field once they enter college, to providing mentors and a stronger sense of community, the College is pushing forward on several new initiatives to help our students succeed.

“\The course helped me in connecting with other engineering students because I was able to meet and relate to them on a level not only in engineering but in other academic classes.\”

Hannah Jane Romero, Electrical and Computer Engineering Freshman

FIRST-YEAR ENGINEERING SEMINAR COURSE REDESIGNED WITH RETENTION IN MIND

Hands-on projects, social learning activities, and peer support are focus areas of updated class.

Walk around the engineering buildings any given Friday during the semester and you’ll likely find small groups of engineering freshman attempting to recreate Leonardo Di Vinci’s arch bridge, launching projectiles from self-made trebuchets, and practicing programming with arduino boards and mini-WiFi drones. These hands-on, creative activities are all part of a redesigned “Introduction to Engineering” course – an effort to provide students with engaging engineering experiences during their first semester in college.

“The rigors of studying engineering – which includes classes in physics, chemistry, and calculus – is very demanding, especially in the first two years,” said Jen Kennedy, Director of Student Achievement for the College of Engineering and co-instructor for the course. “We’re focused on not only assisting students in developing their skills and knowledge as it relates to academic preparation and academic success, but also the support and experiences to stay passionate about the field of engineering and successful in the pursuit of their degree.”

The structure of the course includes large lecture sections (60-120 students) where students engage in instruction in a variety of topics related to academic success, ethics in engineering and computer science, and an overview of the various disciplines that comprise the College of Engineering. They also spend time each week in “breakout sessions,” where they complete hands-on activities in small groups of 4-5 students. In addition to the traditional engineering graduate assistants who help during the class, the course utilizes undergraduate teaching assistants who have successfully completed their second year of study within the college. This tiered peer support gives freshmen the opportunity to interact with a variety of peer mentors who can share their own experiences.

The course is rounded out with group projects and social learning activities such as the “Heroic Humans in STEM” midterm project, which pairs students with an innovator of the STEM field who has demonstrated innovation in STEM as an underrepresented minority, or championed underrepresented minorities in STEM. These projects are designed to engage freshmen in a focused, purposeful learning process and positive learning environment that explores and celebrates the diversity of the class composition – a reflection of the diversity of UNLV as a whole.

Electrical Engineering Professor Pushkin Kachroo partnered with Jen Kennedy to redesign the course, both the “soft skills” components and the hands-on activities with a focus on interdisciplinary exploration. By utilizing diagnostic and assessment tools to evaluate and monitor students’ development and growth in areas such as motivation, study habits, test anxiety, etc., the college hopes to identify and rectify other areas that may hinder student academic performance.

The College of Engineering welcomes 300-400 new freshman into the program each fall.
CREATING A SENSE OF COMMUNITY: THE ENGINEERING LIFE AND LIVING DORM FLOOR SET TO OPEN FOR FALL SEMESTER

The specialty floor will house up to 40 Engineering students and include a computer lab.

For many freshmen, dorm life provides not only an economical living arrangement, but an opportunity to develop a meaningful campus life studying and relaxing with other students and participating in student clubs.

Just ask Youssef Fahmy, a mechanical engineering sophomore from Cairo, Egypt. Youssef moved into campus housing as a freshman and quickly got involved in campus life, volunteering as a College of Engineering Ambassador, joining multiple engineering student organizations, and becoming a Resident Assistant for his campus housing building. It was in this role where he saw an opportunity to really make a difference.

“Engineering courses are quite challenging, and many times some of your best resources are other engineering students, whether it’s helping you to understand complex concepts, or just knowing what you’re going through,” explained Youssef. “But with campus housing at the exact opposite end of campus, once we leave the Engineering buildings, we’re kind of on our own.”

Youssef became aware of other special interest housing and began inquiring about a potential Engineering floor for students. He surveyed current engineering students living in UNLV housing and found there was more than enough interest among them. Now he just needed to convince UNLV that the College of Engineering was behind it.

“As UNLV’s Professor-in-Residence for Housing & Residential Life, and as Director of STEM and STEP Programs for the College of Engineering, I fully supported what Youssef was trying to accomplish and was in a unique position to help,” said Professor Daniel Asera. “UNLV wanted to know that the College was committed to supporting a themed student housing floor. I had many discussions with the Dean and Associate Dean and knew they were committed, as it was consistent with the College’s plan to improve retention and student experience.”

With Professor Asera supporting the floor, commitment from the College’s leadership and student organizations, and interest from students, the proposal for an Engineering Life and Living Floor was approved.

The floor will include a Computer Lab with engineering software installed so students can conduct their research, and complete their homework and projects without having to travel across-campus to the Engineering building complex.

“Engineering courses are quite challenging, and many times some of your best resources are other engineering students, whether it’s helping you to understand complex concepts, or just knowing what you’re going through.”

Youssef Fahmy
Shadden Abdalla: Carving a Legacy and Breaking Glass Ceilings

FROM BECOMING A STUDENT BODY SENATOR TO GIVING OPENING COMMENTS AT A FORMER GOVERNOR BRIAN SANDOVAL EVENT, ELECTRICAL ENGINEERING MAJOR SHADDEN ABDALLA HAS CONTINUALLY PUSHED THE BOUNDARIES OF ACADEMIC SUCCESS.

When electrical engineering senior Shadden Abdalla walks into an engineering class, she is often one of only a handful of women in the room. Coupled with being a minority who wears a hijab, Abdalla knows she stands out in a crowd. This hasn't stopped her from attaining an impressive list of accomplishments that far exceeds the page. In a highly gender-stratified field, Abdalla is intent on shattering stereotypes and making a lasting impact on the lives of current and future UNLV Rebels.

CHOOSING A PATH

Known as one of the most challenging majors, engineering demands that students remain disciplined, focused, and motivated. Most importantly, engineering requires that students retain a desire to learn.

Although engineering had not previously been on her radar, Abdalla knew she needed to choose something conducive to her nature. “I had to ask myself what was most practical for me. I wanted something concrete and logical—something put together like a puzzle,” said Abdalla. “Engineering is perfect because it’s a blend of creativity and practicality.”

Additionally, Abdalla began to get involved with campus life and has since earned vast recognition across campus.

As a freshman, Abdalla joined UNLV’s CSUN Student Government and in the following semester became senator for the College of Engineering. Since then, Abdalla has earned a reputation for helping student organizations. “I found out that many engineering organizations weren’t getting funding and experiencing a lot of issues. I started to get to know them and made it my goal to fix the issues,” said Abdalla.

Thanks to her dedicated involvement, the UNLV Society of Automotive Engineers was awarded over $11,000 and a yearly stipend from the senate that has allowed them to continue competing in the annual BAJA SAE competition.

When reelections took place in 2016, Abdalla won with the most votes for any senator at UNLV. She also became chair of the Scholarships and Grants Committee and interviewed to speak at the 2016 Presidential Address.

A ‘EUREKA’ MOMENT

Despite sampling a few engineering courses, Abdalla wasn’t sure what her engineering focus should be. Things changed when she enrolled in Dr. R. Jacob Baker’s Electrical Engineering Circuits 1 course and was introduced to linear circuit analysis. “The cool thing about Dr. Baker’s class isn’t just that he teaches you something, it’s that he shows you how you can use it in real life,” said Abdalla. “One of my favorite things Dr. Baker always says is, ‘It’s not magic.’ But when you think about it, it IS magic. Engineering is limitless because you’re always making new things.”

As Abdalla progressed in her studies, the challenging nature of engineering became more pronounced. Despite these challenges, Abdalla's desire to learn and truly disseminate information fueled her interest in engineering. “I never doubted my major, but I thought I was bad at it. The truth is that the material is very challenging and most people struggle with it,” said Abdalla. “The more you learn, the more inadequate you tend to feel because you understand the scope of the field. I was determined to get better.”

In the fall of her sophomore year, Abdalla joined Dr. Baker’s research lab where she gained hands-on experience in electrical engineering. The lab is dedicated to designing and creating chips which are then sent to fabrication. Someone then creates a printed circuit board to test the chip's functionality.

“One of my favorite things Dr. Baker always says is, ‘it’s not magic.’ But when you think about it, it is magic. Engineering is limitless because you’re always making new things.”

Shadden Abdalla
“I was by no means the smartest person in class but I really cared about the subject. There’s a difference between the engineer who has good grades and the one who gets hands-on experience. I think Dr. Baker hired me because I care about learning and the material,” said Abdalla.

Recognizing her unique opportunity in the lab, Abdalla has taken steps to share her knowledge with her peers.

Concerned by the lack of a UNLV IEEE chapter—the world’s largest technical professional organization—Dean Rama Venkat asked Abdalla to consider reviving the chapter. Thanks to her combined efforts, the club now boasts 107 members with multiple workshops available throughout the semester.

“What engineers want is something that will make their lives easier. People need incentives and food isn’t enough to attract members, so we have workshops where we teach students different skills,” said Abdalla. “It’s a community of friends but the workshops are also something you need.

Each of us has a unique set of skills that we can learn from.”

Starting from the ground up, Abdalla collaborated with the local IEEE chapter to create awareness, host the IEEEXtreme Competition & Halo Tournament, and arrange three workshops that taught students how to solder and a variety of skills. Currently, the organization serves as an additional resource for student engineers looking to expand their knowledge.

THE DRIVING FORCE

Abdalla’s accomplishments don’t end there. Since 2017, she’s given opening comments at former Governor Brian Sandoval’s Legislative Bill Signing that took place at UNLV, joined the STEM Leadership Committee, and completed two memorial tables honoring the life of Clifton Taylor, a deceased former student and friend.

Her role in Dr. Baker’s lab has also increased and she has now started designing chips for research. Using industry
standard methods, Abdalla is poised to graduate with three years of work experience under her belt.

Abdalla attributes much of her success to her personal identity. “I’m a minority Muslim woman who wears a hijab and has a lot against her by simply existing. Many people don’t understand that our faith promotes the education, freedom, and empowerment of women,” said Abdalla.

With a small percentage of women entering STEM fields, Abdalla hopes to encourage women to enter the field. “I definitely feel that there needs to be a few people who go above and beyond to break those stereotypes and show that there is a lot more to us (both women in engineering and Muslim women) than people think,” said Abdalla. “This field is super difficult, but everything is difficult. No man is more capable than a woman in this field.”

What makes an engineering student successful?

Simply put, Abdalla said, “I’m not afraid to ask for what I want.”

SHADDEN ABDALLA, UNDERGRADUATE ELECTRICAL ENGINEERING STUDENT, WORKS IN PROFESSOR R. JACOB BAKER’S RESEARCH LAB

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LINKS:

UNLV Howard R. Hughes College of Engineering
EMployers who hired our graduates include:

NASA
Lockheed Martin
The Department of Defense
NV Energy
Konami Gaming, Inc.
PENTA Building Group
Teledyne Brown Engineering
MSTS (Mission Support and Test Services)
Zappos
Honeywell
Barrick
AFWERX
City of Las Vegas
Cirque du Soleil
Tesla

Undergraduates

➤ 25% increase in undergraduate degrees conferred by the College in the last 5 years
➤ 33% increase in student enrollment in last 5 years – 2,400 undergraduate students in 2017/2018
➤ 134% increase in donations to the College over past 3 years
➤ Half million in scholarships awarded each year

Undergraduate – 9
(including Bachelor of Science in Entertainment Engineering & Design)

Minors – 7
(including Minor in Aerospace Studies, Unmanned Aircraft Systems, Solar & Renewable Energy and Tech Commercialization)

Degrees and minors offered

UNLV is in the top 3 percent of universities in the country recognized as an “R1 Very High Research Activity” institution according to the new Carnegie Classification of Institutions of Higher Ed.