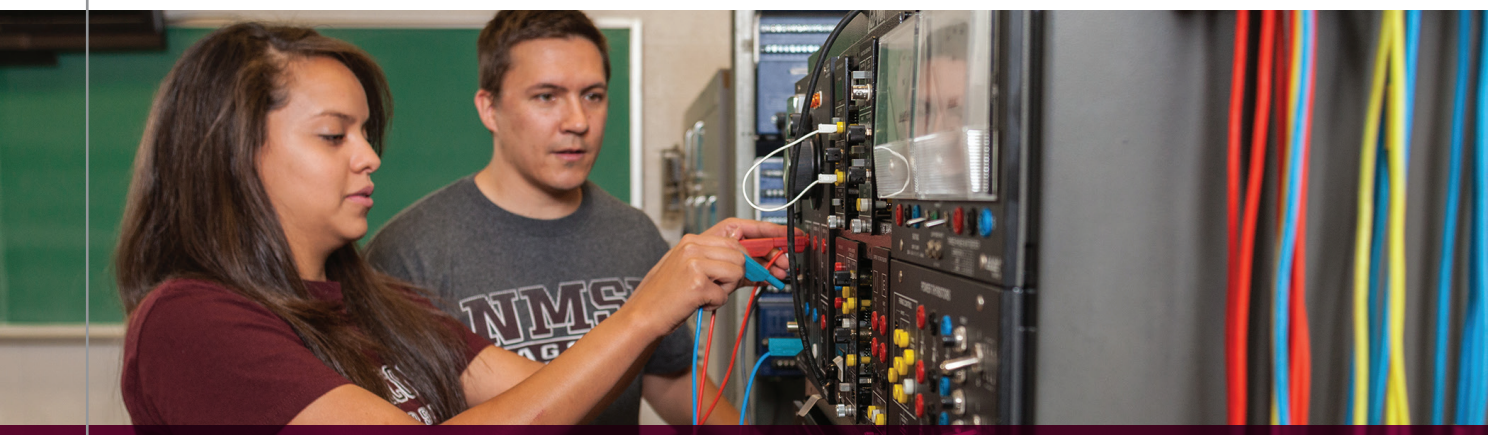




COLLEGE of ENGINEERING



VIEWBOOK / 2020



**BE BOLD. Shape the Future.
New Mexico State University**

WELCOME

I am delighted that you are interested in the New Mexico State University College of Engineering. This is an exciting time to consider pursuing a degree in engineering, and I am confident you will find NMSU a great place to begin your academic journey.

Here at NMSU, we are bold in our thinking and in our work. Our faculty and staff lead cutting-edge research in areas that span water quality to satellite communications. Whether local or global, our students are on-the-move spreading Aggie pride by participating in professional and service-based organizations, competitions, internships and co-ops, and study abroad programs. Additionally, our partnerships with industry, Sandia and Los Alamos National laboratories, the Air Force Research Laboratory, White Sands Missile Range and Spaceport America strengthen relevance and application of our programs both in and out of the classroom, ensuring a strong demand for our students following graduation.

Our programs have been designed to make sure that you succeed. The new Eloy Torrez Family Learning Communities provide access to tutoring and mentoring, and serve as an inviting place for students to meet with friends to do study or work on student projects. The Aggie Innovation Space gives students an opportunity to explore their innovative and entrepreneurial side with additional access to the NMSU Arrowhead Center for product commercialization. These are just a few examples of the many student-based programs unique to NMSU.

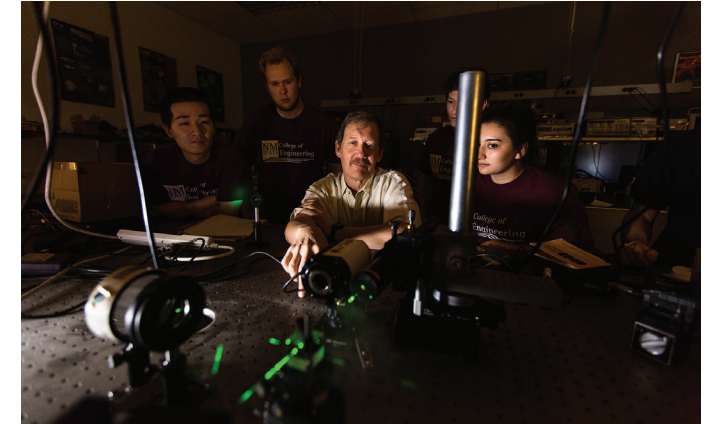
I invite you to learn more about our programs and see how you can join the ranks of other Aggies on-the-move at NMSU.



Lakshmi N. Reddi
Dean, College of Engineering

Shape the Future

As an engineering student at NMSU, you will join the ranks of Aggies across the globe who are shaping the future. From the first courses offered in civil and mechanical engineering more than a century ago, NMSU's College of Engineering continues to garner national rankings in research, teaching and service. As a land-grant institution, we pride ourselves in providing the best-of-the-best for our students. From hands-on learning experiences to research opportunities working alongside recognized faculty, NMSU engineering students are afforded a quality education in a supportive environment that helps students shape the course of their own success. As a result, our graduates are competitive both in the workforce and in their graduate school pursuits.



Be Bold

NMSU engineering students think and act boldly. They move forward, turning knowledge into action. Join us in stretching the boundaries of the possible as we think and work boldly to break new ground and refuse to let barriers define us.

Define Your Future

Your NMSU engineering degree might lead you to:

- Develop technologies to provide clean drinking water
- Create robotic limbs for amputees
- Design the next generation of satellites and drones
- Discover safe and reliable ways to deliver electricity
- Establish innovative, safe and cost-effective systems and manufacturing processes
- Perfect cutting-edge communication systems for Earth and space applications
- Devise new materials such as nano-films and high-tech coatings used in a multitude of products

Our bachelor's degree programs will prepare you to define your future. Choose from 13 programs leading to a multitude of engineering and technology careers or advance your learning through cutting-edge research as a graduate student.

NMSU's College of Engineering is the sole provider in New Mexico for degrees in:

- Aerospace Engineering
- Engineering Technology
- Industrial Engineering
- Surveying/Geomatics Engineering
- Information and Computer Technology

AEROSPACE Engineering

B.S., M.S. and Ph.D.



As an aerospace engineer, you might create aircraft that weigh more than a half a million pounds or spacecraft that travel more than 1,700 miles per hour. Aerospace engineers are innovative research leaders in the design, development and analysis of commercial and defense-related aircraft, drones, spacecraft and satellites. They also supervise the manufacture of these products.

Our ties to the Air Force Research Laboratory, NASA's White Sands Test Facility, White Sands Missile Range, Spaceport America, NMSU's Physical Science Laboratory and other leaders in this field serve as a catalyst for students pursuing aerospace engineering.

DID YOU KNOW?

NO. 1 IN THE NATION AMONG PEERS FOR SCIENCE AND ENGINEERING FUNDING

NMSU leads all of America's minority-serving institutions in federal obligations for science and engineering activities, reports the National Science Foundation's National Center for Science and Engineering Statistics.

CHEMICAL and MATERIALS Engineering

B.S., M.S. and Ph.D.



Chemical engineers work in manufacturing, pharmaceuticals, healthcare, design and construction, petrochemicals, food processing, specialty chemicals, microelectronics, electronic and advanced materials, polymers, biotechnology and environmental health and safety industries among others. They rely on their knowledge of mathematics and science — particularly chemistry — to address technical problems safely and economically. Chemical engineering is also a great way to advance your career into areas of law, finance and medicine.

At NMSU, you can even expand your knowledge of the beverage industry through NMSBrew, a new program designed to prepare students for careers as brewing engineers in the emerging craft brewing industry.

CIVIL Engineering

B.S., M.S. and Ph.D.



Civil engineers design, build and maintain the physical infrastructure of our communities, including freeways, high-rise buildings, bridges, dams, roads, airports and water treatment plants. Civil engineers plan and supervise construction and preservation of these facilities. They also work to address emerging needs for advanced technologies for ground stabilization, high-performance materials, intelligent transportation systems, remote sensing, renewable energy, resilient infrastructure, structural health monitoring, sustainable construction, traffic modeling and simulation and water conservation.

DID YOU KNOW?

BOOSTING ECONOMIC EARNINGS WITH THE NATION'S BEST

A recent Brookings Institution report places NMSU in the top 10 percent for value-added mid-career salaries. NMSU was listed as 89th of 863 institutions across the nation for value added mid-career earnings, which is the difference between a college's predicted and actual student economic outcomes.

CIVIL Engineering Technology

B.S.



Students in this field of study learn to link theory with application. Civil engineering technologists support the planning, analysis, design and construction of highways, buildings, bridges, dams and wastewater treatment systems. They also serve as project managers, estimate construction costs, specify materials needs and assist in monitoring instrumentation. Specialty courses include properties of construction materials, blueprint reading, surveying/geomatics, the design of structures, highway technology, land development and infrastructure, hydraulics and construction management.

Before I began my major at NMSU in engineering, I had always been unsure if it was what I wanted to do the rest of my life. However, after having the great opportunity of interning at Emery Sapp and Sons in Kansas City, Missouri, I was able to develop my professional, academic and personal goals. Now, I



have a better idea of what I want to do with my career.

-YOMARA RIOS-LAURENZANA



ELECTRICAL and COMPUTER Engineering

B.S., M.S. and Ph.D.



Electrical and computer engineers make the world come alive. They put the digital touch in everything from aircraft, cars, cameras and computer hardware to drones, medical equipment, satellites and video products. They also create the telecommunications pathways and energy delivery systems that have become critical in today's world. Electrical and computer engineers are involved in every aspect of our lives.

DID YOU KNOW?

A TOP-TIER UNIVERSITY

For the sixth time in the past seven years, New Mexico State University has been recognized as a top tier university by U.S. News & World Report. The rankings are based on assessment of excellence, graduation and retention rates, faculty resources, student selectivity, financial resources, graduation rate performance and alumni giving.

ELECTRONIC and COMPUTER Engineering Technology

B.S.



This field of study focuses on the integration, test and evaluation of electronic and computer systems. Graduates from this program pursue careers in industries such as power companies, aeronautics, medical electronics, computers, broadcasting, telecommunications, factory automation and robotics. They also are integral members of engineering teams focused on applied design, product development, manufacturing, production and technical operations.

“Being a student at NMSU has exposed me to different career paths and helped me to determine my interests. The opportunities I have had here to develop both technical and occupational skills gives me confidence in professional environments.”
-ADRIANNA SANDERS
MECHANICAL ENGINEERING GRADUATE
AZTEC HIGH SCHOOL

ENGINEERING Physics

B.S.



Engineering physics combines the application of basic physical principles with traditional engineering disciplines. Engineering physicists create some of today's most exciting technologies by manipulating the world at the cellular level through nanotechnology: creating machines, controls and sensors that are smaller than a grain of salt. They move massive amounts of information faster than ever before through fiber-optic technology, and design laser technologies used in fields as diverse as medicine and defense.

INDUSTRIAL Engineering

B.S., M.S. and Ph.D.



Industrial engineers stand out among the engineering disciplines for their multi-disciplinary expertise. Industrial engineers look at the big picture and identify ways to improve systems, processes, and products designed for manufacturing by managing people, materials, machines, energy, information and capital. They focus on increasing quality, safety and profitability by providing innovative solutions to complex problems facing virtually all enterprises operating in today's global economy. Graduates from the program have pursued careers in agribusiness, healthcare, manufacturing, aerospace, defense, transportation, automotive and finance.

INFORMATION Engineering Technology

B.S.



Information engineering technology focuses on the study of information engineering and its principles, technologies, networks and applications. It is a vibrant discipline that has a tremendous impact on the economy as well as society. Students learn about database technologies, networking, internet applications, digital and computer forensics and information security. Course projects include virtual machines, personal networks and client-based websites. Students in the program are active in national competitions involving swarm technology and hacking using their skills in coding and cybersecurity.

DID YOU KNOW?

RANKED AMONG THE TOP 4 PERCENT OF GLOBAL INSTITUTIONS

The 2018/19 Center for World University Rankings place NMSU in the top 4.3 percent of institutions of higher education worldwide.

With 18,000 degree-granting institutions of higher education worldwide evaluated, NMSU ranked 770th and earned a national rank of

184th this year.

INFORMATION and Communication Technology

B.I.C.T

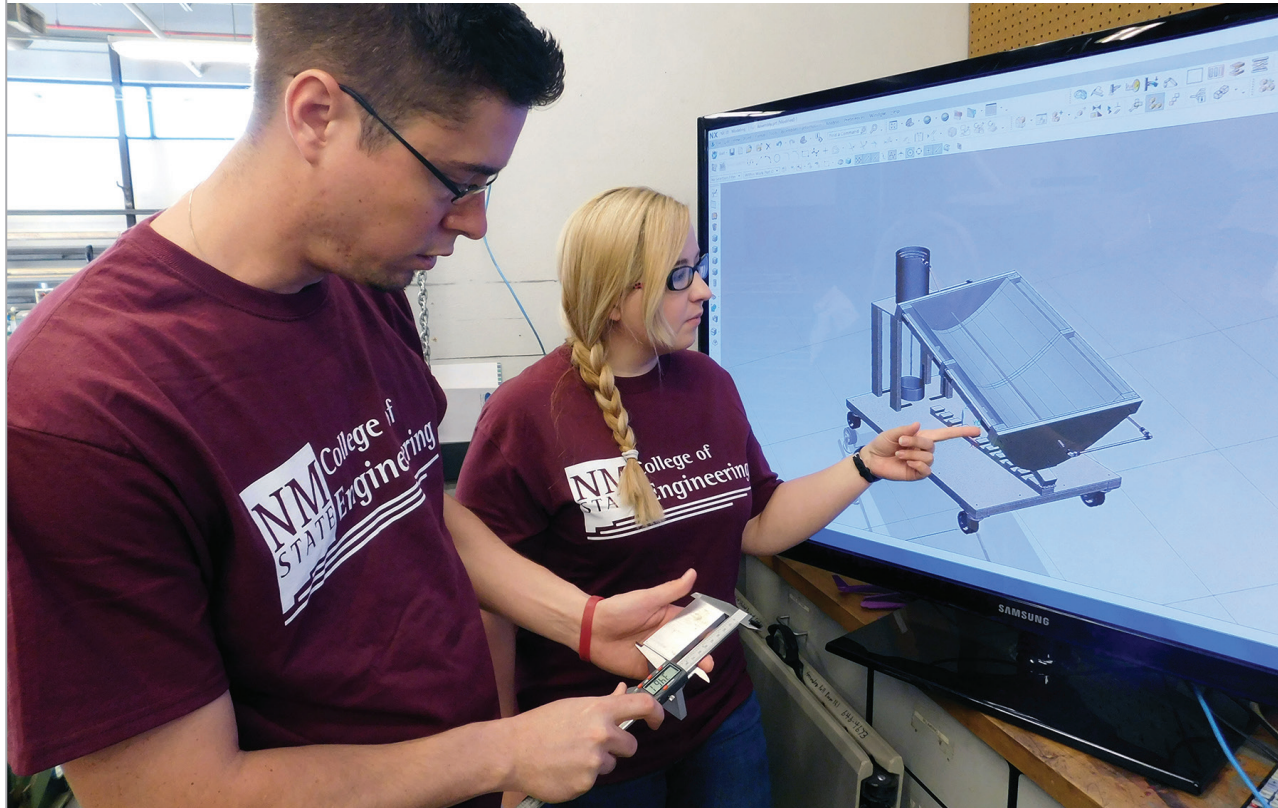


Information and communication technology is a distance education program, offering junior- and senior-level coursework for students who have already completed certain prerequisites to earn their bachelor's degrees.

The curriculum covers the topics and concepts that are required to design, implement and manage a variety of computer-based information systems. Graduates with these skills are highly employable. The program is well-suited for students with an associate degree in a computer or technology field.

MECHANICAL Engineering

B.S., M.S. and Ph.D.



If it moves, chances are, a mechanical engineer designed it. Mechanical engineers apply the principles of engineering, physics, mathematics and materials science to design, analyze, manufacture and maintain mechanical systems. These include machines as simple as a bicycle or as complex as the latest military jet. Mechanical engineers often design things that aren't machines, and are involved in the creation of a wide range of devices, components and systems — from the ordinary, such as packaging for products, to the amazing, such as artificial organs. Graduates from the program have pursued careers in aerospace, space, defense, automotive, healthcare, robotics, power and utility systems, oil and gas, renewable energy, manufacturing, and have also started their own companies.

MECHANICAL Engineering Technology

B.S.



Mechanical engineering technology majors learn theory and hands-on applications in the fields of manufacturing, product design and development, power systems, machinery — mechanisms, computer-aided modeling and instrumentation, heat transfer and fluids, to name a few. METs learn the implementation of current mechanical engineering practices through the application of mathematics and engineering science to design problems and the operation and testing of engineering and mechanical systems. The growing demand for modern and complex industrial machinery, machine tools and computer-controlled processes makes the employment outlook excellent for graduates from this program.

“NMSU offers many opportunities and experiences for students to explore, which helped me understand the future I wanted, but more important NMSU provided me with the tools to turn that future I wanted into the reality I am living now.”

—NATALIA PEREZ-PEREZ
NEW MEXICO STATE UNIVERSITY/
UNIVERSITY OF CHIHUAHUA

SURVEYING/GEOMATICS Engineering

B.S.



Defining boundaries and measuring land has been an important part of human endeavor since the beginning of recorded history, but today relies on modern methods and equipment such as unmanned aerial vehicles and GPS technology. Whether it is determining the shape of a nation or specifying the path of a new highway, our world is defined by surveying. Geomatics and surveying engineers analyze, design and execute surveying and mapping projects. In addition to knowledge of the mathematical and computational methods involved in surveying measurement and analysis, you will also have an understanding of the legal principles of boundary location and the laws related to boundaries and land use.

DID YOU KNOW?

RANKED IN TOP 12 PERCENT FOR IMPROVING STUDENTS' SOCIAL MOBILITY

According to CollegeNET's Social Mobility Index ranking, NMSU ranks in the top 12 percent for schools that help improve their students' economic status. The rankings are based on tuition, economic background, graduation rate, early career salary and endowment.

Together We Shape the Course of our Success

At NMSU, we challenge our students to dare to be bold. Individually and collectively, the NMSU community — faculty, staff and students — work to stretch the possibility of what could be.

Eloy Torrez Family Learning Communities

Foreman Engineering Complex Room 300

ENGR.NMSU.EDU/LEARNING

The Eloy Torrez Family Learning Communities were developed by alumni and industry partners who recognize that learning styles differ across our diverse and engaged student population and wanted to remove barriers to learning to ensure student success. The learning communities provide access to tutoring assistance for most engineering courses, study sessions, and mentoring from industry partners, and an inviting place for students to meet with friends to do homework or collaborate on student projects.

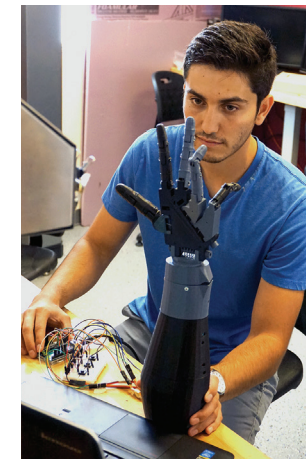


Home to more than 30 engineering student organizations, the learning communities gives you a place to connect with other students, become involved in college activities, and have access to great academic and career resources.

Aggie Innovation Space

Foreman Engineering Complex Room 306

INNOVATE.NMSU.EDU



The Aggie Innovation Space is a series of facilities within the college that enable creative, innovative and entrepreneurial projects to come to life. Within AIS, NMSU engineering students have access to experienced peer mentors, 3D printers, advanced electronics, robotic arms, design software, and specialty equipment, machinery and tools. The AIS network of facilities allows students to fabricate and prototype, conduct engineering analysis, and manufacture finished products for student projects as well as entrepreneurial endeavors.

Living Learning Community

Garcia Hall East

HOUSING.NMSU.EDU/LLC/

Engineering students live together providing opportunities to collaborate on projects, form study groups and build relationships with fellow students. The residents can connect with role models who help them to learn to balance their academic demands while enjoying the college experience. Students must be declared engineering majors and receive approval from the College of Engineering.

APPLY FOR SCHOLARSHIPS

NMSU provides one of the best educational values in the country. In addition to federal, state and university-based scholarships, the College of Engineering has one of the largest scholarship program funding on campus. These scholarships vary in amount and are awarded based on a broad spectrum of criteria. Admission to NMSU is required to be eligible for campus-wide financial aid and scholarships. To be eligible for engineering scholarships, you also must be admitted to the College of Engineering.

One Application Fits All

ScholarDollar\$ is a single application submission that, once completed, provides consideration for all university-wide and engineering scholarships. NMSU accepts scholarship applications from October 1 through March 1. Follow the process below to complete your scholarship application:

1. Complete a Free Application for Federal Student Aid (FAFSA) at [FAFSA.ED.GOV](https://fafsa.ed.gov). List NMSU as your school of choice on the FAFSA.
2. Fill out the ScholarDollar\$ application online at [SCHOLARSHIPS.NMSU.EDU](https://scholarships.nmsu.edu) before March 1.

Visit [SCHOLARSHIPS.NMSU.EDU](https://scholarships.nmsu.edu) for more information regarding scholarships and to fill out a scholarship application.

Other Sources of Support

New Mexico Alliance for Minority Participation
[NMAMP.NMSU.EDU](https://nmamp.nmsu.edu)

NMAMP offers scholarships to engineering students who have participated in various STEM programs while in high school. NMAMP also provides paid undergraduate research opportunities under the tutelage of a professor. Community college students may qualify for the NMAMP Transfer Scholarship.

TRIO STEM-H

[STEMH.NMSU.EDU/APPLY](https://stemh.nmsu.edu/apply)

The STEM-H program provides services to low-income, first-generation, and students with disabilities pursuing degrees in science, technology, engineering, math and health sciences. Applications from first- or second-year and transfer students are welcome.

Career Services – Garcia Center, Room 224

Career Services is your go-to destination for advice on formatting your resume and preparing for internship and job interviews. More information: [CAREERSERVICES.NMSU.EDU/](https://careerservices.nmsu.edu/)

Student Competitions

- American Institute of Aeronautics and Astronautics Design Build Fly Competition
- American Society of Civil Engineers Steel Bridge Competition
- American Institute of Chemical Engineers Chem-E-Car Competition®
- Society of Automotive Engineers International Mini Baja Contest
- Associated General Contractors of America Building Competition
- National Society of Professional Surveyors Student Competition
- National Collegiate Cyber Defense Competition

Open up a World of Opportunity


As an engineering graduate of NMSU, you will have plenty of career options. With a Bachelor of Science or advanced degree in engineering, you will be well prepared to pursue a career in industry, government, academia, or even start your own company. NMSU holds the largest annual career fair in the region with the majority of employers seeking to hire engineering students.

Our national industry partnerships offer cooperative education programs, internships and summer programs, giving you hands-on career-related work experience. NASA, Raytheon, Johnson & Johnson, ExxonMobil, and Cummins, for example, provide work experiences complementing your classroom learning and giving you a valuable advantage for future employment.

Explore New Experiences

At NMSU, you will have an array of opportunities to meet new people and learn new things through student organizations. There are more than 30 student organizations that focus on community service projects. National engineering honor societies and student chapters of professional engineering organizations offer opportunities to advance your leadership skills, showcase student research and network with other students and professional engineers. Student competitions through these groups provide real-world, hands-on experiences. See a complete list at [ECOUNCIL.NMSU.EDU/](https://ecouncil.nmsu.edu/).

“My parents didn't really go to college. I was probably going to end up staying in the town I grew up in, but then I decided to come to NMSU and I ended up getting a couple of scholarships to actually be able to afford school.”



—ADAM BOUMA,
MAE GRADUATE
STUDENT



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New Mexico State University

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