

COLLEGE OF ENGINEERING

DISCOVER THE POSSIBILITIES



All About Discovery!
New Mexico State University
engr.nmsu.edu



IMAGINE WHAT YOU WILL DISCOVER

How many engineering contributions do you use every day? Roads? Cars? Cell phones? Computers?

Do you see yourself...

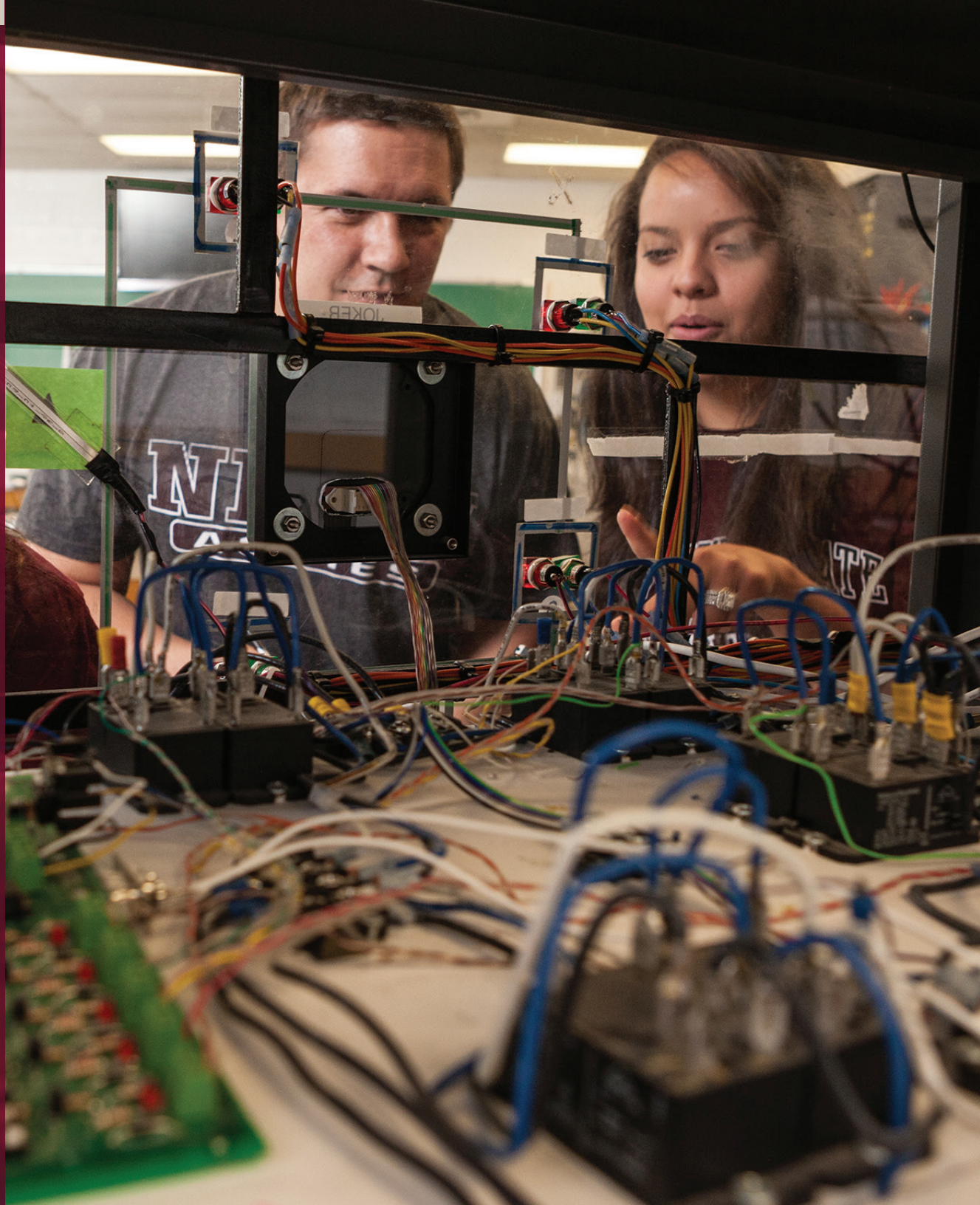
- Developing technologies to provide clean water?
- Creating robotic limbs for amputees?
- Designing satellites that improve our communication systems?
- Discovering safe and reliable ways to deliver electricity?

Our bachelor's degree programs are an excellent place to begin. Choose from 10 programs leading to a multitude of engineering and technology careers, or to fascinating areas of graduate studies.

The College of Engineering

From the first courses offered in civil and mechanical engineering more than a century ago, NMSU's College of Engineering today is the oldest engineering college in New Mexico and has earned national rankings along the way. Our faculty members have garnered distinction in teaching and research that combines engineering fundamentals with hands-on experiences, giving our graduates a competitive advantage in the workforce and advanced studies.

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FIND YOUR PASSION

Engineering degree programs

- Aerospace Engineering (B.S., M.S. and Ph.D.)
- Chemical Engineering (B.S., M.S. and Ph.D.)
- Civil Engineering (B.S., M.S. and Ph.D.)
- Electrical and Computer Engineering (B.S., M.S. and Ph.D.)
- Engineering Physics (B.S.)
- Engineering Technology (B.S., majors in Civil, Electronics and Computer, Information, or Mechanical)
- Industrial Engineering (B.S., M.S. and Ph.D.)
- Information and Communication Technology (B.I.C.T.)
- Mechanical Engineering (B.S., M.S. and Ph.D.)
- Surveying Engineering (B.S.)

Accreditation

NMSU College of Engineering baccalaureate degree programs in civil, chemical, electrical and computer, engineering physics, industrial, mechanical, and surveying engineering are accredited by the Engineering Accreditation Commission of ABET.

Baccalaureate degree programs in civil, electronics and computer, information and mechanical engineering technology are accredited by the Engineering Technology Accreditation Commission of ABET.

ABET, Inc.

111 Market Place, Suite 1050

Baltimore, MD 21202-4012

410-347-7700

www.abet.org

engr.nmsu.edu

DID YOU KNOW?

Among institutions of higher education in New Mexico, we alone offer degrees in aerospace, industrial and surveying engineering, engineering physics, engineering technology, and information and communication technology.

DISCOVER A WORLD OF OPPORTUNITY

As an engineering graduate of New Mexico State University, you will have plenty of career options. With a Bachelor of Science in engineering, opportunities are wide-open in industry, government and academia. NMSU holds the largest annual career fair in the region with the majority of employers seeking engineers. Following is a sampling of companies and agencies that have historically sought our students for internships, co-ops and permanent employment.

Private Industry

- Cummins Inc.
- General Dynamics Corp.
- Raytheon Co.
- The Boeing Co.
- Exxon Mobil Corp.
- Intel Corp.
- El Paso Electric
- Public Service Company of New Mexico
- Chevron Phillips Chemical
- Johnson & Johnson
- Harris Corp.
- Freeport-McMoRan
- TRAX International
- Honeywell International Inc.
- Western Refining
- Bradbury Stamm Construction
- Calculex Inc.
- Jaynes Corp.
- Molzen Corbin and Assoc.
- Halliburton
- Bohannon Huston Inc.

Government Agencies

- U.S. Army Research Laboratory
- U.S. Drug Enforcement Administration
- Puget Sound Naval Shipyard
- Salt River Project
- NAVAIR
- Los Alamos National Laboratory
- National Geospatial-Intelligence Agency
- FBI
- MIT Lincoln Laboratory
- Sandia National Laboratories
- U.S. Navy
- U.S. Department of Agriculture
- U.S. Department of the Interior
- NASA
- NM Department of Transportation

Work while you study

Many engineering students get on-the-job experience while they are still in school through internships and cooperative employment. These opportunities give you added engineering knowledge and skill, not to mention extra money for school expenses, along with a leg ahead when you are ready to seek full-time employment.

Continue with graduate studies

You also will be well prepared for graduate studies in engineering, advanced science and other fields, such as business administration, medical and law school programs. Many of our students continue right here at NMSU to earn their master's and doctoral degrees. Others have gone to some of the nation's top engineering schools for graduate study.

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TRANSFORM YOUR LIFE WITH EARNING POWER

Our nation needs college- and career-ready engineering students to address the challenges facing the 21st century. The U.S. Bureau of Labor Statistics projects the demand for engineers to continue to grow over the next 10 years. And, college graduates with engineering degrees can expect relatively higher wages and lower unemployment rates when compared to non-engineering peers.

The median annual wage for architecture and engineering occupations was \$75,780 in May 2014. The median annual wages for all occupations in this group were higher than the median annual wage for all occupations in the economy, which was \$35,540, reports the Bureau of Labor Statistics.

Among 2016 bachelor's degree graduates, those from the STEM disciplines are expected to receive the highest starting salaries, reports the National Association of Colleges and Employers' Winter 2016 Salary Survey. The top three projected salaries are for engineering, computer sciences, and math and sciences graduates. Overall, the average salary for bachelor's degree graduates earning engineering degrees is projected to be \$64,891.

A Sampling of Engineering Salaries

2014 Median Pay

U.S. Bureau of Labor Statistics (published Dec. 2015)

• Aerospace Engineers	\$105,380
• Chemical Engineers	\$96,940
• Civil Engineers	\$82,050
• Computer Hardware Engineers	\$108,430
• Electrical and Electronics Engineers	\$93,260
• Engineering Physicists	\$106,840
• Industrial Engineers	\$81,490
• Mechanical Engineers	\$83,060
• Surveyors	\$57,050

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DEGREE PROGRAMS

AEROSPACE ENGINEERING

As an aerospace engineer, you might create airplanes that weigh more than a half a million pounds or spacecraft that travel more than 17,000 miles per hour. Aerospace engineers are innovative research leaders in the design, development and analysis of aircraft, spacecraft, satellites and missiles. They also supervise the manufacture of these products.

NMSU's aerospace engineering students are fortunate to be in the hub of aerospace research with connections to NASA's White Sands Test Facility, White Sands Missile Range, Spaceport America, NMSU's Physical Science Laboratory, The Boeing Co. and other leaders in this field.

Aerospace Engineering Studies

As an aerospace engineering student, your coursework for the initial semesters will include basic engineering concepts, communication skills and laboratory procedures. Later studies include more specialized coursework in the primary areas of aerospace engineering.

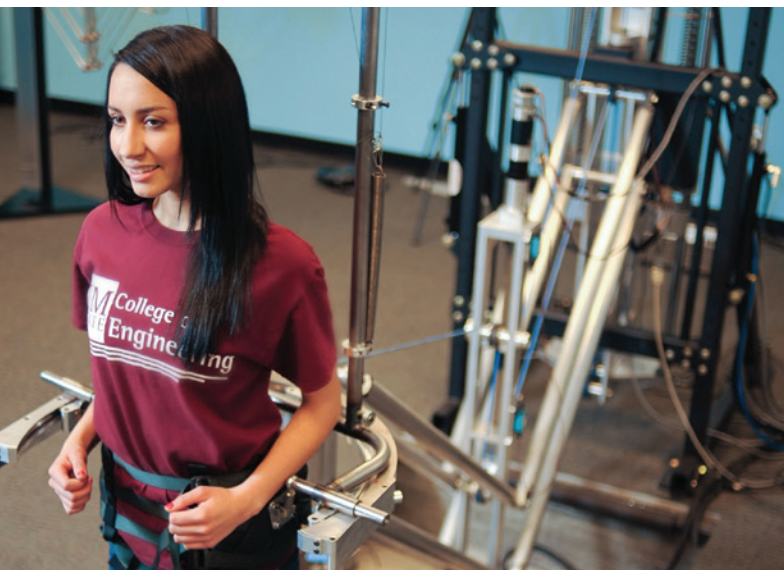
Research Highlight

Professor Ou Ma received a U.S. patent on reduced-gravity technology that not only trains astronauts to work in space, but can also help persons with disabilities who have walking impairments. Pictured (bottom photo) is a graduate student in Ma's Reduced-Gravity and Biometrics Lab.

mae.nmsu.edu

DID YOU KNOW?

NMSU is a **NASA Space Grant College**, advancing learning related to aerospace science, technology, aeronautics and space exploration.





CHEMICAL AND MATERIALS ENGINEERING

The work of chemical and materials engineers is all around us. They are pioneering materials and associated processes essential to nanotechnology, fuel cells and biomedical engineering. As a chemical engineer, you will have opportunities to work in a wide variety of industries, using your knowledge of mathematics and science, particularly chemistry and engineering. This field of study could also lead you to law, education or medicine.

Chemical and Materials Engineering Studies

As a chemical engineering student, your fundamental studies will include principles in chemistry, mathematics and physics, with further emphasis on energy balances, thermodynamics, transport phenomena and kinetics. At NMSU, you can pursue minors in pre-law, pre-medicine, environmental management, materials engineering and nuclear energy.

Research Highlight

Associate Professor Jessica Houston (bottom photo, left) is working to design minimally invasive diagnostic measurement capabilities that can be used in clinics to monitor the effectiveness of cancer treatments.

chme.nmsu.edu





DEGREE PROGRAMS

CIVIL ENGINEERING

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 the construction and preservation of these facilities. They also work on contemporary issues including 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.

Civil Engineering Studies

Civil engineering students at NMSU can specialize in environmental, general civil, geotechnical, structural and water resources engineering. Your curriculum will encompass engineering principals and analysis, mathematics, physical and social sciences. Major course work includes engineering physics, mechanics, hydraulic engineering, chemistry and environmental engineering, in addition to electives for the various civil engineering options.

Research Highlight

NMSU civil engineering professor Paola Bandini (bottom photo, right) leads NMSU's effort as part of the NSF Center for Bio-mediated and Bio-inspired Geotechnics to expand the emerging field of biogeotechnical engineering.

ce.nmsu.edu

DID YOU KNOW?

NMSU consistently ranks in the top **7 percent of all U.S. institutions for engineering** based on National Science Foundation Research Expenditures.





ELECTRICAL AND COMPUTER ENGINEERING

Electrical and computer engineers make the world come alive — they put the digital touch in everything that makes up today's world, such as cars, cameras, medical equipment and video products. As an electrical engineer, you might create more reliable and efficient methods for distributing energy. Or you might improve our ability to communicate via cell phone, satellite radio and the Internet.

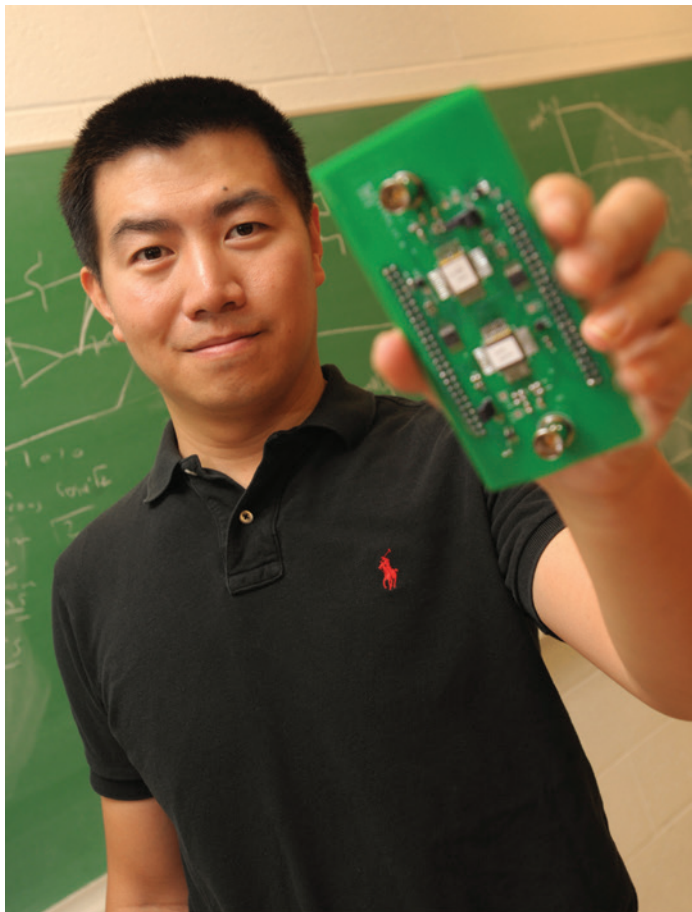
Electrical and Computer Engineering Studies

If you study electrical or computer engineering at NMSU, you will gain a breadth of knowledge about control systems, communications, computer architecture, digital design, electromagnetics, electronics, photonics, power and signal processing. You can also pursue electives in one or more of these areas to build advanced skills.

Research Highlight

Assistant Professor Wei Tang (bottom photo) is taking a cue from nature to devise the next generation of integrated low-power, wearable micro-devices. The human brain inspired his approach in the novel design of a system of state-of-the-art miniaturized sensors that can detect, transmit and reliably process valuable medical data.

ece.nmsu.edu



DEGREE PROGRAMS

ENGINEERING PHYSICS

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 they design laser technologies that can be used in fields as diverse as medicine and defense.

Engineering Physics Studies

The NMSU engineering physics program is offered jointly by the College of Engineering and the Department of Physics in the College of Arts and Sciences. As an engineering physics student, your degree program provides a rigorous course of study in the fundamentals of physics and applied mathematics along with a core curriculum in one of four engineering disciplines: aerospace, chemical, electrical or mechanical engineering.

Research Highlight

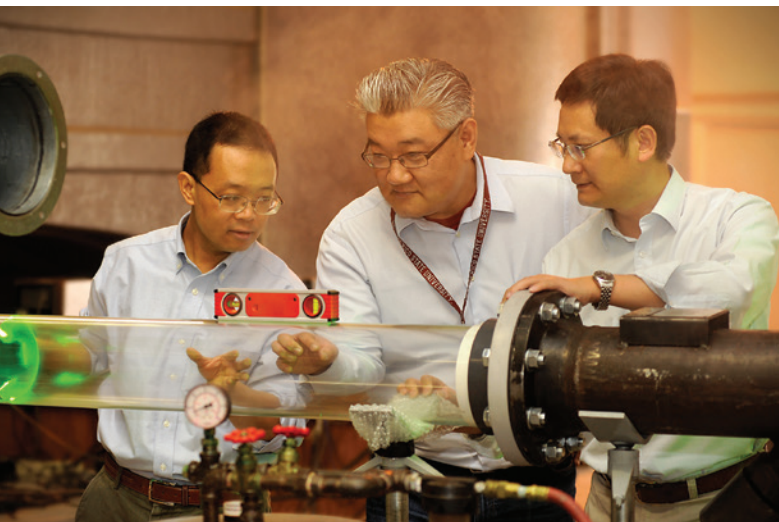
NMSU mechanical and aerospace engineering professors (bottom photo, from left) Mingjun Wei, Young Lee and Fangjun Shu recently secured a large grant to fund research in structural and fluid dynamics. They acquired new equipment that expands capabilities in laser-assisted nonintrusive experimentation and data-driven reduced-order modeling of multidisciplinary phenomena.

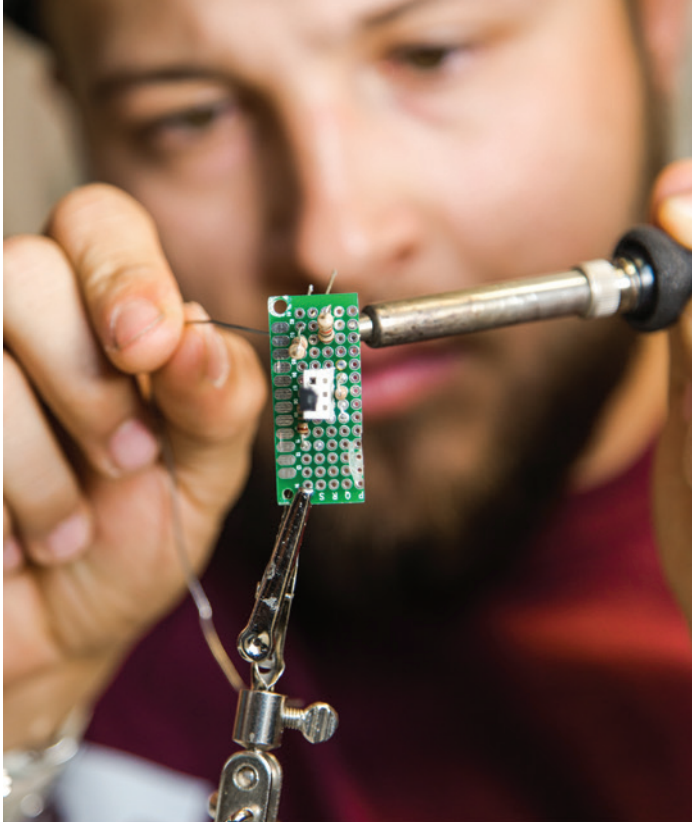
engineeringphysics.nmsu.edu



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**Scientists study the world as it is,
engineers create the world that
never has been.**

– Theodore von Karman
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ENGINEERING TECHNOLOGY

Engineering technology graduates are problem solvers, creative thinkers and innovators.

As an engineering technology graduate, you will be prepared to apply engineering principles and concepts in specialized areas, offering you a wide variety of career options, such as managing the construction of highways, buildings or water treatment plants; helping businesses to maximize efficiency through the use of computers; and designing and testing new products.

Engineering and Engineering Technology: What's the Difference?

As an engineering technologist, you will use fundamental engineering knowledge to design, test and analyze a wide variety of solutions to real-world applications. Engineers receive more theoretical, scientific and mathematics coursework. Jobs obtained by graduates of both engineering and engineering technology programs are often similar and engineering technology students are eligible for professional licensure.

Our Engineering Technology and Surveying Department programs are focused on application. If you learn by doing and enjoy problem-based learning, engineering technology may be the program for you. Many of our professors have industry experience and bring real-world application into the classroom.

et.nmsu.edu



ENGINEERING TECHNOLOGY STUDIES



At NMSU, you can specialize in civil, mechanical, information or electronic and computer engineering technology, with minors available in manufacturing, renewable energy and security technology.

Engineering technology students receive a solid foundation in engineering theory and design principles. A major portion of engineering technology study focuses on practical application and skills required to design, build and test areas specific to a particular discipline. The curriculum includes mathematics, science and applied engineering and computing courses.

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Civil Engineering Technology

Students in this field of study learn to implement current civil engineering practices in design, construction and project management for our infrastructure: buildings, roads, bridges, tunnels, pipelines, water and wastewater facilities. Specialty courses include properties of construction materials, blueprint reading, surveying, design of structures, highway technology, land development and infrastructure, hydraulics and construction management.

Electronic and Computer Engineering Technology

This field of study includes coursework about design, building and testing of a wide range of electronic and computer systems. As a graduate from this program, you will have career opportunities in industries such as power companies, aeronautics, medical electronics, computers, broadcasting, telecommunications, factory automation and robotics or you might be part of an engineering team in applied design, product development, manufacturing, production, or technical operations.

Information Engineering Technology

Information Engineering Technology students become knowledgeable about database technologies, networking, Internet applications, digital and computer forensics, and information security. Course projects include virtual machines, personal networks and client-based web sites. Our students participate in swarm technology and hacking competitions.

Mechanical Engineering Technology

In addition to solid engineering fundamentals, the mechanical engineering technology program provides laboratories with hands-on application of classroom lessons. Students in this field of study receive specialty courses in fluid technologies, mechanisms and machines, thermodynamics, computer-aided drafting and computer-aided manufacturing.



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**The engineer has been,
and is, a maker
of history.**

– James Kip Finch

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INDUSTRIAL ENGINEERING

Industrial engineers stand out among the engineering disciplines in that they deal with the human element. Their job is to figure out how to make production processes happen better, faster and safer. Your favorite television or computer was on the store shelf for you to buy because an industrial engineer made sure the necessary materials, personnel and machinery were available to produce and deliver it. Industrial engineers analyze, design and control production, service and distribution systems. They use mathematical, physical and social sciences along with principles and methods of engineering analysis and design to specify, predict and evaluate systems.

Industrial Engineering Studies

As an industrial engineering student, you will be prepared for a wide variety of employment opportunities in manufacturing, healthcare, government, research and advanced education in fields such as engineering, law, medicine or business. In addition to engineering principles and analysis, you will study chemistry, industrial engineering, engineering physics, manufacturing processes, engineering operations, quality control, simulation modeling and facilities planning and design.

Research Highlight

Industrial engineering Ph.D. candidate Brendan Sullivan (bottom photo, left) and Delia J. Valles-Rosales, associate professor of industrial engineering (bottom photo, right), examine the Portable Assisted Mobile Device that was developed by NMSU students for the 2014 PACE (Partners for the Advancement of Collaborative Engineering Education) competition in Turin, Italy.

ie.nmsu.edu



DEGREE PROGRAMS

MECHANICAL ENGINEERING

If it's a machine, a mechanical engineer designed it. This includes machines as simple as a bicycle or as complex as the latest military jet. Mechanical engineers often design things that aren't machines. As a mechanical engineer, you might be involved in the design, manufacture and operation of a wide range of devices, components and systems — from the ordinary, such as packaging for products, to the amazing, such as artificial organs.

Mechanical Engineering Studies

As a mechanical engineering student at NMSU, you will receive a thorough foundation in solid mechanics, thermal sciences, fluid mechanics, materials science, engineering analysis, engineering design, and the mathematical and computational methods engineers use to solve problems. Mechanical engineering students learn to use modern experimental and data analysis techniques.

Research Highlight

Associate Professor Igor Sevostianov (bottom photo, right) has been researching the micromechanics of materials, structural health monitoring and biomechanics that may improve materials for surgical bone implants, as well as new materials for the aerospace and automotive industries and other fields.

DID YOU KNOW?

NMSU is a **U.S. Department of Education Hispanic-serving institution**, touted by numerous sources as among the best colleges in the nation for helping minorities to succeed in the fields of science, technology, engineering and math.



mae.nmsu.edu



SURVEYING ENGINEERING

Defining boundaries and measuring land have been an important part of human endeavor since the beginning of recorded history. Whether determining the shape of a nation or specifying the path of a new highway, our world is defined through surveying. As a surveying engineer, you will 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.

Surveying Engineering Studies

As a surveying engineering student, you will learn the scientific, mathematical and engineering principles of surveying, along with the legal, political and social context of surveying. You will also study the responsibilities and ethics of surveying professionals, as well as how to collect, analyze, interpret and apply survey data. NMSU's surveying engineering graduates are prepared for licensure by the state in which they work.

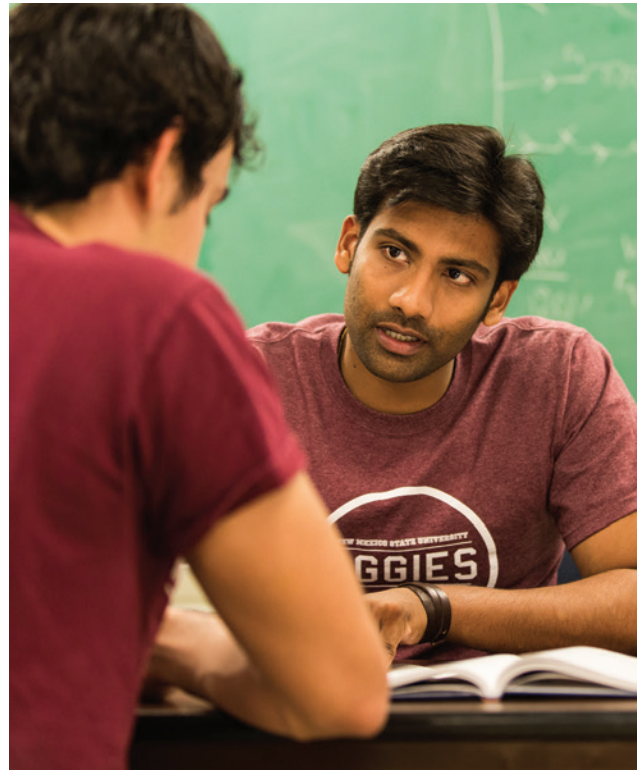
Research Highlight

Assistant Professor Ahmed Elaksher (bottom photo) is using unmanned aerial vehicles to monitor dry-land ecosystems and soil erosion. From overlapping aerial photos, Elaksher creates a time-series of digital elevation models that help researchers visualize and quantify soil movement.

et.nmsu.edu



INVEST IN YOUR FUTURE: APPLY FOR FINANCIAL AID AND SCHOLARSHIPS



In recent years,
NMSU has
awarded nearly
\$40 MILLION
ANNUALLY
in scholarships
to students.

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 pools of scholarship funds on campus, and it's set aside specifically for engineering students. These scholarships vary in amount and are based upon a broad spectrum of criteria.

You must be admitted to NMSU to be considered for financial aid and

NMSU scholarships. To be considered for engineering-specific scholarships, you also must be admitted to the College of Engineering.

One application enables you to be considered for any and all university-wide and engineering scholarships for which you are eligible. It's known as Scholar Dollar\$, and it's easy and convenient.

Scholarship applications are accepted from October 1 through March 1.

scholarships.nmsu.edu



OUR CARING COMMUNITY SUPPORTS YOU

All of our freshmen engineering students take Engineering 100 — Freshman Engineering Experience — to help them get started off on the right foot.

Students in this class have access to junior- and senior-level peer mentoring to help them with adjusting to college and their classes. They will be exposed to the various engineering disciplines through hands-on activities and engineering design challenges. Engineering students will take the introductory English course in classes dedicated solely to them.

Engineering 100 benefits

- Mentoring from upperclassmen
- Free tutoring
- Hands-on engineering projects
- Exposure to all engineering disciplines
- Interaction with fellow engineering students

DISCOVER NEW EXPERIENCES

At NMSU, you will have a multitude of opportunities to meet new people and learn new things through student organizations.

There are organizations that focus on community service projects. National engineering honor societies and student chapters of professional engineering organizations offer opportunities to showcase student research and network with other students and professional engineers. Student competitions provide real-world, hands-on experience.

Engineers Council

A member of the National Association of Engineering Student Councils, E-Council encourages the involvement of engineering students in professional, academic and civic areas. The E-Council connects students with other engineering and student organizations at NMSU. A directory of student organizations can be found at ecouncil.nmsu.edu.

Student Competitions and Activities

Concrete Canoe Competition
Engineering Without Boundaries
Mini-Baja Contest
NASA Swarmathon Challenge
Reno Bidding Competition
Steel Bridge Competition

ecouncil.nmsu.edu



Children from Nicaragua test out a new foot bridge built by Engineering Without Boundaries students from NMSU.

IMPORTANT CONTACTS

NEW MEXICO STATE UNIVERSITY

Admissions

575-646-3121

800-662-6678

admissions@nmsu.edu

admissions.nmsu.edu

Financial Aid and Scholarships

575-646-4105

877-278-8586

financialaid@nmsu.edu

fa.nmsu.edu

Housing

575-646-3202

housing@nmsu.edu

housing.nmsu.edu

COLLEGE OF ENGINEERING

Chemical and Materials

Engineering

575-646-1213

chme.nmsu.edu

Civil Engineering

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civil@nmsu.edu

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Engineering Physics

575-646-3831

ep@nmsu.edu

engineeringphysics.nmsu.edu

Engineering Technology and Surveying Engineering

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enrtech@nmsu.edu

et.nmsu.edu

Industrial Engineering

575-646-4923

ie.nmsu.edu

Klipsch School of Electrical and Computer Engineering

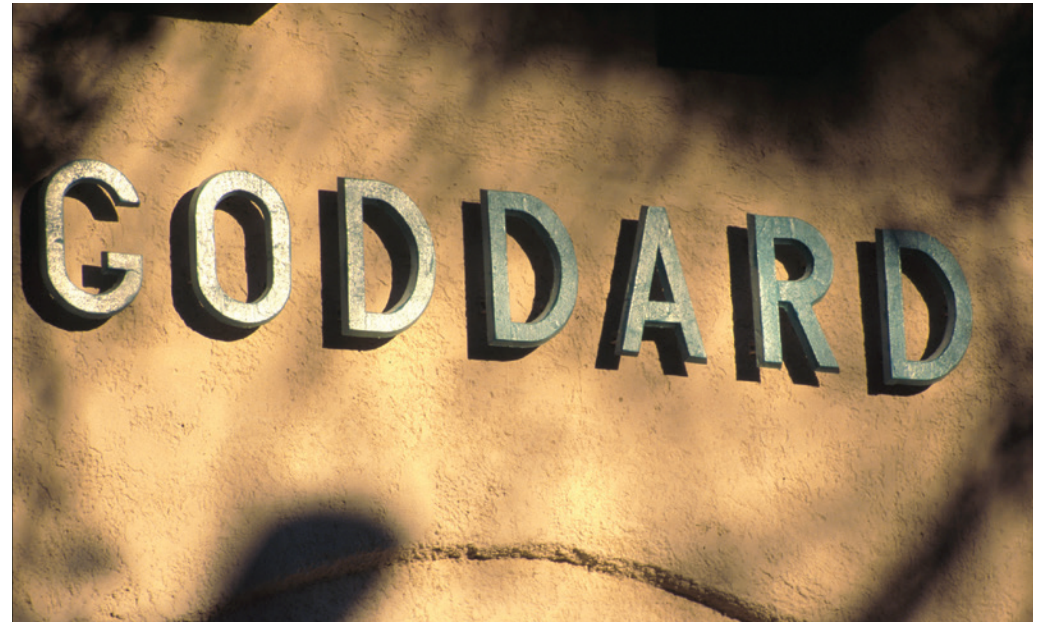
575-646-3115

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Mechanical and Aerospace Engineering

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NM
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New Mexico State University



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