Who are engineers?

Engineers are creative problem solvers who make our lives better by designing and producing things that benefit people. They apply mathematical and scientific principles to find solutions to the challenges facing our society.

Look around you. An engineer has likely been involved in developing most of the things you see. The homes we live in, the cars we drive, the highways we navigate, the technology we rely upon, the health care we need—engineers make them happen.

Engineering Majors at Penn State

- Aerospace Engineering
- Architectural Engineering
- Biological Engineering
- Biomedical Engineering
- Biomedical Engineering Technology*
- Building Engineering Technology*
- Chemical Engineering
- Civil Engineering
- Computer Science
- Computer Engineering
- Data Sciences w/ Computational Sciences Option
- Electrical and Computer Engineering Technology*
- Electrical Engineering
- Electrical Engineering Technology*
- Electro-Mechanical Engineering Technology*
- Energy Engineering**
- Engineering Science
- Environmental Systems Engineering**
- Engineering*
- Industrial Engineering
- Materials Science and Engineering**
- Mechanical Engineering
- Mechanical Engineering Technology (available as 2- or 4-year degree)*
- Mining Engineering**
- Nuclear Engineering
- Petroleum and Natural Gas Engineering**
- Plastics Engineering Technology*
- Rail Transportation Engineering*
- Software Engineering*
- Structural Design and Construction Engineering Technology*
- Surveying Engineering*
- Surveying Engineering Technology*

*Offered only at Penn State Commonwealth Campuses
**Offered through the College of Earth and Mineral Sciences

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What type of engineer do you want to be?

Engineers inspire and impact society in so many ways, with numerous career paths that Penn State Engineering students can follow. Penn State Engineering offers 32 majors, 13 minors, and 6 certificates across the University, giving students the opportunity to explore their options and discover their preferred route to an engineering career.

### Aerospace Engineering
Aerospace engineers focus on aerodynamics, propulsion, structures, dynamics and controls, and information technology in order to serve as architects of air, space, or underwater vehicles and wind-energy systems.

**CAREER OPPORTUNITIES:** Manufacturing, service, and software companies; government agencies; research laboratories [aero.psu.edu]

### Architectural Engineering
Architectural engineers build solutions, enhancing their client's ability to achieve their goals, including reducing energy and environmental impact; and creating green, sustainable, and high-performance buildings.

**CAREER OPPORTUNITIES:** Architectural engineering, consulting engineering, and construction firms [ae.psu.edu]

### Biological Engineering
Biological engineers seek to meet the demand for more abundant supplies of nutritious, high-quality food at affordable prices while considering the environmental impact of material production and processing.

**CAREER OPPORTUNITIES:** Biological and food processing, bio-energy, off-road machinery development, protection of natural resources, structural design [abe.psu.edu]

### Biomedical Engineering
Biomedical engineers apply their skills and analysis to understand biological systems. Biomedical engineering integrates classical and modern engineering principles with the life sciences and health care.

**CAREER OPPORTUNITIES:** Medical device development; diagnostic and therapeutic tool design; physiological system modeling for the health care and pharmaceutical industries; medical school [bme.psu.edu]

### Chemical Engineering
Chemical engineers focus on the processes involved in making new products or treating the environment, such as pharmaceuticals, plastics, alternative fuels, therapeutic proteins, and artificial organs.

**CAREER OPPORTUNITIES:** High-tech, chemical, or pharmaceutical industries; microelectronics companies [che.psu.edu]

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Civil Engineering
Civil engineers design and develop facilities that both serve human and environmental needs and ensure public safety.

CAREER OPPORTUNITIES: Design and construction of buildings, bridges, transportation systems, and water and wastewater systems
[c ee.psu.edu]

Computer Science & Engineering
Computer engineers provide society with the myriad engines that have powered the information age and with the tools and expertise to use the current generation of computers to design the next.

CAREER OPPORTUNITIES: System software and application developers; embedded system designers; network architects; digital designers; and computer architects
[c eecs.psu.edu]

Data Sciences with Computational Sciences Option
Data sciences engineers possess the core skills and problem-solving approaches to compete for leading-edge analytics positions across many different industry sectors.

CAREER OPPORTUNITIES: Data analyst, data and analytics manager, data architect, data engineering, data visualizer, statistician
[c eecs.psu.edu]

Electrical Engineering
Electrical engineers design electrical and electronic systems and their components for a wide range of applications such as mobile phones, consumer electronics, computers, and power generation.

CAREER OPPORTUNITIES: Systems and circuit design for consumer electronics; signal processing software and hardware development for audio and video applications; software design for artificial intelligence, computer vision, and medical imaging
[c eecs.psu.edu]

Engineering Science & Mechanics
Graduates of this program conduct interdisciplinary work, including mechanics, materials, energy conservation, power, electronics, computing, sensors, biomaterials and medicine, robotics, and nanotechnology.

CAREER OPPORTUNITIES: Graduate work in engineering, science, medicine, business, or law; research and development of new materials, devices, sensors, and machines; design of innovative systems and processes
[c esm.psu.edu]

Industrial & Manufacturing Engineering
Industrial engineers design manufacturing and service processes, develop automation for high productivity, ensure product quality, design jobs that conform to the capabilities and limitations of the human operator and ensure the workers’ health and safety, and analyze and design supply chain systems.

CAREER OPPORTUNITIES: Manufacturing, aerospace, health care, transportation, and theme park industries
[c ime.psu.edu]

Mechanical Engineering
Mechanical engineers integrate principles of energy and mechanics to design machines and products.

CAREER OPPORTUNITIES: Automotive, aerospace, utilities, and manufacturing companies; small, high-tech robotic, computer software, nanotechnology, and biomedical technology firms
[c me.psu.edu]

Nuclear Engineering
Nuclear engineers apply principles of nuclear science to meet energy needs and benefit humankind.

CAREER OPPORTUNITIES: Electrical utility, medical, energy, and aerospace industries
[c nuce.psu.edu]

The world of engineering today is so exciting, and there are so many ways for you to have impact down the road. From robotics or health care to transportation or systems resilience, we have it all. Take the time to understand what you might be able to achieve by getting your Penn State Engineering degree.”

– Justin Schwartz
Harold and Inge Marcus Dean of Engineering

Watch the Exposure to Major video series to learn more: bit.ly/penn-state-majors
Penn State offers one of the broadest ranges of engineering majors you’ll find anywhere. When you’re ready to apply for your major, you’ll have the support to make the best choice for you.

Opportunity
Being a Penn State Engineering student opens you up to a world of opportunity. Beyond the variety of engineering major options, more than 75 student organizations, and multiple support systems, Penn State also offers access to research labs, facilities, and equipment to all students. For example, the Bernard M. Gordon Learning Factory is packed with machining equipment and 3D printing technology to help bring ideas to reality.

At Penn State, research isn’t limited to graduate students and professors. Undergraduate students are encouraged to find a subject and dive in, partnering with a faculty mentor.

Penn State also offers a number of global programs: Engineering students have gone to China and Rome for intense 7-week academic programs, traveled to Senegal to build well pumps to improve access to clean water, and built pedestrian bridges in Panama over spring break.

Support
You don’t have to figure it out alone.

• 13 four-year majors through the College of Engineering at University Park, 5 four-year majors through the College of Earth and Mineral Sciences, 13 two- and four-year degree programs at Penn State Commonwealth Campuses, plus 1 four-year major through the College of Information Sciences and Technology.

• These are offered through the College of Engineering. Penn State offers hundreds of additional minor and certificate options!

Why Penn State?

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Penn State engineering students accomplish incredible things, and they do it together. The Center for Engineering Outreach and Inclusion (CEOI) helps students build their community and support their peers. From summer bridge and orientation programs to research projects and academic tutoring to tight-knit alumni networks, students are always welcome in the CEOI. With the support system of CEOI faculty and staff, it’s not a question of ‘if’ undergraduate and graduate students will find their community—it’s simply a question of when. Stop by 112 Hammond Building to learn more and find your community.

**When will you find your community?**

**STUDENT SUCCESS PROGRAMS:**

**Multicultural Engineering Program**

The Multicultural Engineering Program (MEP) strives to improve the recruitment and retention of underrepresented groups pursuing a degree in engineering. MEP also promotes student development and engagement by providing academic and community enrichment programs, including summer bridge, MEP Orientation, Jump Start, and MEP Nights throughout the academic year.  
[bit.ly/mepinfo]

**Women in Engineering Program**

The Women in Engineering Program (WEP) works to recruit women into engineering, to facilitate the academic success of undergraduate women engineers, and to catalyze career development of women entering the workforce through such programs as Girl Scout Saturdays and the Society of Women Engineers Stayover. WEP encourages women to enter the engineering field. Once enrolled at Penn State, students can participate in WEP Orientation, facilitated study groups, and WEP Wednesdays, all of which help build the network they remain close with well past graduation.  
[bit.ly/wepinfo]

Come to us for information about:
Mentoring Programs, Internships, Professional Development, Academic Resources, Special Interests, Housing, Scholarships
Penn State has everything that a person needs to be successful and supported. We want to make sure that our students are connected with a network that enables them to be successful.”

— Tonya Peeples
Associate Dean for Equity and Inclusion

Student Research and Engagement
There are a multitude of opportunities for students to become involved in research or academically focused enrichment programs, including summer research experiences across Penn State’s campuses. During the academic year, students can work under a faculty mentor to conduct an engineering research project. Most students submit a research paper and present their work at a semi-annual research symposium. [bit.ly/sreinfo]

Impact Scholars
Impact Scholars are selected by the Penn State College of Engineering to contribute in specific and meaningful ways to the inclusive academic community within the college and University. In this program, scholars develop peers and allies to support academic success and build a social network within engineering through engineering orientation programs, first-year seminars, and other co-curricular activities. [bit.ly/impactscholarsinfo]

Campus Outreach & Tradition Programs
Most of our four-year engineering degrees conclude at University Park, but many of the degrees start at other Penn State campuses. Campus Outreach helps students transition to life at University Park through summer bridge programs, an annual leadership conference, and various engagement activities to help students interact and learn about various resources at University Park. [bit.ly/campusoutreachinfo]

Academic Excellence Center
Located in 323 Sackett Building—near Old Main, the center of the University Park campus—the Academic Excellence Center provides an excellent work environment complete with study space, computers, and free tutoring services. It is also a gathering place for group projects and student organization meetings. [bit.ly/aecenterinfo]

For more information:
112 Hammond Building
University Park, PA 16802
814-865-4287
bit.ly/ceoiconnect

inclusion.engr.psu.edu
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Benefits of study abroad
- Awaken your creativity
- Make yourself more marketable to employers
- Improve cross-cultural communication skills
- Develop foreign language skills

Build on your experience
Programs to broaden your global perspective:
- International Engineering Minor or Certificate
- Engineering Leadership Development Minor
- Global Engineering Fellows Program
- Humanitarian Engineering and Social Entrepreneurship Program

Graduate on time
Plan ahead, and find the program that is right for you! From a short-term summer program to a full academic year experience, students can complete both general education and major course requirements abroad, allowing them to stay on track for graduation.

Affordable options
Most programs are very comparable in cost to a semester at Penn State. Some programs even offer in-state tuition rates to out-of-state students. In addition, many scholarships exist to help students fund their study abroad experience, including our Engineering Travel Grant.

Where will your engineering education take you?

Penn State prides itself in creating world-class engineers. Students in the College of Engineering have the opportunity to study in a variety of programs spanning six continents. Make your degree stand out with an international experience.
How to begin your engineering career?

The College of Engineering hosts more than 1,000 different employers at technical recruiting events every year on the University Park campus, resulting in internship, co-op, and full-time job opportunities for students.

1. **Introduce yourself to recruiters**
   A successful job search starts with a strong résumé—a summary of your educational and professional qualifications, work experience, and relevant skills. We can help you write yours as early as your first year at Penn State. We can also help you get started with cover letters and other job search documents.

2. **Make a professional impression**
   You’ll need business attire for career fairs and other recruiting events, so begin putting together a professional ensemble so you’re ready for any event or interview. Our website and Pinterest pages can provide ideas to help you look sharp.

3. **Get practical experience**
   Engineering students are lucky—there are thousands of paid internship and co-op opportunities available. Log in to Nittany Lion Careers, Penn State’s free recruiting platform, and start exploring your options.

4. **Build your network**
   Networking—talking to people who are hiring, or who know other people who may be hiring—is an important part of your job search. Start building your professional network while you’re still a student. There are many ways to network, including talking to employers at recruiting events and connecting to professionals on LinkedIn.

5. **Get the scoop from other students**
   Engineering Career Envos are engineering students who have completed internship and co-op experiences and who are available for walk-in office hours on weekdays during the academic year. Interested in a student’s perspective on working as an engineer? Stop by!

Check out career.engr.psu.edu for helpful tools and information:
- Job search timelines and resources
- Co-ops and internships
- Résumés and other job search documents
- Networking and interviewing
- Comparing job offers
- Accepting the job
- Engineering average salaries
- Tips for success in the workplace
- Department and campus career contacts
- Upcoming events