



Who

are engineers?

**DISCOVER
DESIGN
DEVELOP**

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.

enr.psu.edu

Engineering Majors at Penn State

Aerospace Engineering
Architectural Engineering
Biological Engineering
Biomedical Engineering
Biomedical Engineering Technology*
Chemical Engineering
Civil Engineering
Computer Engineering
Computer Science
Computational Data Sciences
Electrical and Computer Engineering Technology*
Electrical Engineering

Electrical Engineering Technology*
Electro-Mechanical Engineering Technology*
Energy Engineering**
Engineering*
Engineering Science
Environmental Systems Engineering**
Industrial Engineering
Interdisciplinary Business w/ Engineering Studies*
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*
Polymer Engineering and Science*
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



What type of engineer do you want to be?

Engineers inspire and impact society in so many ways, with numerous career paths to 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: Structural engineering, lighting and electrical design, HVAC and mechanical system design, construction project management, consulting engineering
[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.



Watch the Exposure to Major video series to learn more: bit.ly/explore-engineering

CAREER OPPORTUNITIES: Biological and food processing, bio-energy, agricultural 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 traditional 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





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 in the College of Engineering

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

[cee.psu.edu]

Computer Science & Engineering

Computer engineers provide society with the myriad of 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

[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

[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

[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

[esm.psu.edu]

Industrial 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

[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

[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

[nuce.psu.edu]

*These degrees finish at University Park. For a list of all engineering major, minor, and certificate options at Penn State, visit: bit.ly/penn-state-majors

Watch the Exposure to Major video series to learn more: bit.ly/penn-state-majors



enr.psu.edu

Why

Penn State?

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.

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, engineering students also have access to University research labs, facilities, and equipment. For example, the Bernard M. Gordon Learning Factory is packed with machining equipment and 3-D printing technology to help bring ideas to reality.



Penn State hosts one of the **largest career fairs in the country**—1,000+ employers who are specifically recruiting engineers!

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 seven-week academic programs, traveled to Senegal to build well pumps to improve access to clean water, and built pedestrian bridges in Panama during spring break.

35

MAJORS

13

MINORS

6

CERTIFICATES

- 14 four-year majors through the College of Engineering at University Park, 5 four-year majors through the College of Earth and Mineral Sciences, 10 two- and four-year engineering technology 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!

Support **You don't have to figure it out alone.**

ENGINEERING ADVISING CENTER

Advisers are on hand to help you choose classes, figure out your path to graduation, and answer any questions you may have along the way. Best of all, they have an open door policy so you can talk to someone when it fits your schedule.

ENGINEERING CAREER RESOURCES

Once you are ready to start looking for an internship, co-op, or job, our team provides you with tips for writing resumes and cover letters, networking with corporate recruiters, and landing that engineering-related position of your dreams.

ENGINEERING LIVING LEARNING COMMUNITIES

Choose to live in a residence hall with other engineering students. Whether you seek help with classes, or a friend to join you for a campus event, a night out, or a shared meal, your peers will be just down the hall.

OUTREACH AND INCLUSION INITIATIVES

Through such programs as the Women in Engineering and Multicultural Engineering Programs, Engineering Ambassadors, and Engineering Career Envoys, current students help support you as you adjust to college, prepare for internships, and more.

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PennState
College of Engineering



The Women and Multicultural Engineering Programs help students build their communities, from their acceptance to Penn State through graduation and beyond.



With the opportunity to get an early start on academics and transitioning to college life, summer bridge programs foster community before the school year even begins.

When

will you find your community?

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, academic tutoring, and tight-knit alumni networks, students are always welcome in the CEOI. With the support 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. All programs are open to all students.

Come to us for information about:

Mentoring programs, internships, professional development, academic resources, special interests, housing, scholarships, and more

STUDENT SUCCESS PROGRAMS:

Multicultural Engineering Program

The Multicultural Engineering Program (MEP) strives to improve the recruitment and retention of students pursuing a degree in engineering and foster a welcoming environment that celebrates culture and inclusion. MEP also promotes inclusive student development and engagement by providing academic and community enrichment programs, including Engineering Summer Bridge, MEP Orientation, and MEP Nights throughout the academic year.

[bit.ly/mepinfo]

Women in Engineering Program

The Women in Engineering Program's (WEP) mission is to actively promote an equitable and productive environment in the College of Engineering through advocacy and action. An array of WEP initiatives recruit, retain, and graduate students to advance engineering equity. WEP outreach attracts K-12 students to engineering and computer science, and WEP yearlong mentoring and resources facilitate academic success, professional development, and career networking of undergraduate and graduate engineering students.

[bit.ly/wepinfo]

“ 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 Peebles
Associate Dean for Equity and Inclusion



For more information:

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

Structured team-building activities not only help students form friendships, but also encourage the skills students need to solve engineering problems.

Student Research

There are a multitude of opportunities for students to become involved in research or academically focused enrichment programs, including summer research experiences across the University. 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 gain peers and allies to support academic success and build a social network within engineering through orientation programs, first-year seminars, and other co-curricular activities.

[bit.ly/impactscholarsinfo]

Student Transition and Pre-College Programs

Our Student Transition Programs support and facilitate student success for all undergraduate students transitioning from Penn State campuses and outside institutions to the college at the University Park campus through programs like STEP-UP, Jump Start, the Commonwealth Engineering Scholars Leadership Conference, and Engineering Ahead. Our Pre-College Programs broaden participation and build pathways to engineering for young aspiring engineers through academic excellence to enhance college readiness, foster inclusion, critical engagement, and innovation.

[bit.ly/coe-transitioninfo]

Academic Excellence Center

Located in 323 Sackett Building—near Old Main, the center of the University Park campus—the Academic Excellence Center is home to a diverse group of upper-level student tutors that help to ensure first- and second-year student academic success. The center offers free drop-in tutoring services focused on pre-major coursework.

[bit.ly/aecenterinfo]

International Engineering Programs

Penn State is a global university educating students from around the world. The mission of the Penn State International Engineering Programs (IEP) is to further connections between Penn State domestic students and Penn State students from abroad, so both can create and benefit from meaningful interactions. IEP partners with various units at the college- and University-level to enhance opportunities for international student development.

[bit.ly/intl-eng]

Graduate Equity

The mission of Graduate Equity is to grow and diversify College of Engineering graduate programs. We work toward this goal through high-impact recruiting, developing targeted first-year programs for incoming graduate students, fostering community, and professional development opportunities. Graduate Equity supports students' graduate school journey, and we encourage students to explore the many opportunities offered, including graduate student groups, events, and resources.

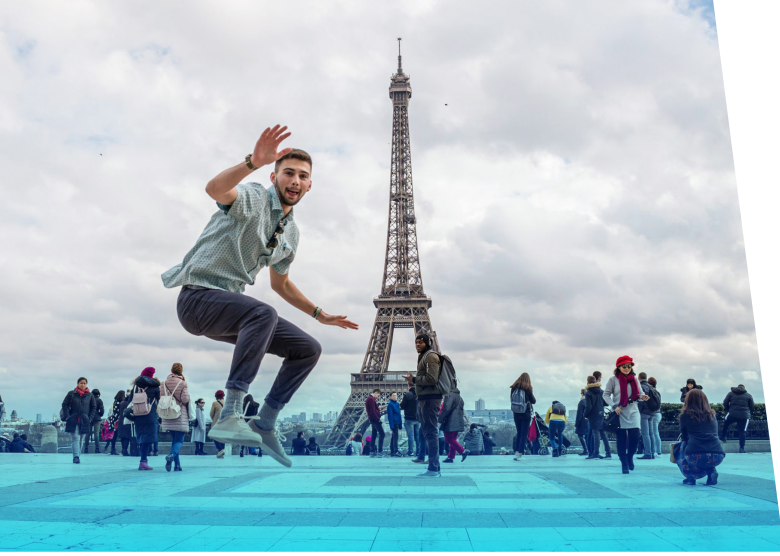
[bit.ly/grad-equity]

inclusion.engr.psu.edu

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PennState
College of Engineering



Quick Facts

Global courses are taught in English and approved for Penn State credit.
Grants and scholarships are available.
First-year student programs are offered.



Where will your engineering education take you?

VISIT US!
The Center for Global
Engineering Engagement
208 Hammond
international@engr.psu.edu
global.engr.psu.edu

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.

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

Find a program to broaden your global perspective:

- First-year student opportunities
- International Engineering minor or certificate
- Engineering Leadership Development minor
- Global Engineering Fellows program
- Humanitarian Engineering and Social Entrepreneurship program

Graduate on time

The Global Engineering Engagement support team is here to help you plan ahead, and find the program that is right for you. From a short-term summer program to a full academic year experience, engineering students can complete both general education and major course requirements abroad, allowing them to stay on track for graduation.

Affordable options

Most semester-long programs are comparable to a semester at Penn State. Penn State faculty-led summer programs 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.

How

to start your career planning now

Don't wait until you're ready to graduate to start planning for your career. The Engineering Career Resources & Employer Relations office offers a variety of resources, events, and activities to help you position yourself for future success as an engineer—starting during your first year at Penn State!

1 Prepare job search and application documents

Get started by drafting a strong resume that includes a summary of your educational qualifications, work experience, and relevant skills. Visit our website for ideas and tips for resumes, curricula vitae, cover letters, and other job search and application documents.

2 Participate in career events

More than 1,000 different employers participate in virtual or in-person engineering career events every year at Penn State University Park. Want to connect with recruiters, learn about different companies or organizations, and find out what employers really want? Check out our website to see what's coming up!



Hear Penn State engineering alumni talk about job prospects and career options at bit.ly/explore-engineering

3 Gain real-world experience

Get practical work experience while you're still a student by completing an internship, co-op, or short-term research opportunity—and even earn academic credit! There are hundreds of semester-long and summer engineering internships and co-ops posted on an ongoing basis in Nittany Lion Careers [bit.ly/nl-careers], the University's free single-system recruiting platform for all students, alumni, and employers.

Check out career.engr.psu.edu for helpful tools and information:

- Job search timelines and resources
- Co-ops and internships
- Resumes 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

career.engr.psu.edu

