Engineering & Applied Science

The School of Engineering & Applied Science (SEAS) offers real-world solutions through hands-on learning, both inside and outside of the classroom.

APPLIED SCIENCES WITH A PURPOSE

At Gonzaga, SEAS faculty members constantly encourage engineering students to innovate. **The project-based first-year course integrates teamwork, writing, public speaking, and other skills employers have come to expect from our graduates.** More than a dozen SEAS clubs and student professional organizations present additional opportunities for first-year students to participate in team projects and to network with others who share similar interests.

Excellent engineering and computer science programs require up-to-date technology and tools. SEAS enjoys support from both the University and private industry and offers students modern facilities and lab equipment. Gonzaga's engineering and computer science programs have their own lab facilities that provide opportunities for hands-on experiments and research in each field. Through the facilities in the Herak building and the gold-level LEED-certified PACCAR building, **Gonzaga students gain valuable learning experiences in a variety of applications, including environmental protection, propulsion, computing, electronic circuitry, and machining.** The computer aided design (CAD) and engineering (CAE) labs provide a fully-networked computer environment where both hardware and software are regularly updated to better support the needs of students and faculty.

— TOP —
10%
(Nationwide ranking, US News & World Report, Best Undergraduate Engineering Program (No Doctorate) since 2016)

THE JESUIT DIFFERENCE

Gonzaga University lives its mission of *cura personalis*, or "care for the whole person". It starts with respect for all individuals, building up a desire to improve quality of life for others. From their first year to their final year, students think about challenges from local and global perspectives. Graduates continue learning during their whole lifetime.

"Everyone is there to support you to find your own journey of who you want to be as an engineer and grow in your strengths."
- Mehak Bhargava '19, Computer Engineering

A WORLD OF POSSIBILITIES

Students may apply to attend the Gonzaga campus in **Florence, Italy** during their sophomore year, and engineering courses are offered there each spring. Additional study abroad opportunities include programs in **the Netherlands, Spain,** and **New Zealand.**

THE PROGRAMS

Each Bachelor of Science degree program from SEAS emphasizes a well-rounded education in the Jesuit and humanistic tradition.

Civil Engineering

Gonzaga civil engineers create the systems that protect human health and the environment: safe and sustainable structures, water treatment, and smart infrastructure. Through classroom discussion, lab research, and field practice, the Civil Engineering program prepares students to serve others as professionals, scholars, and entrepreneurs. Our curriculum offers students the opportunity to probe deeper into the sub-disciplines of environmental, geotechnical, structural, transportation, and water resource engineering.

Electrical & Computer Engineering

Students learn to imagine and design new electrical, cyber-physical systems that are built from, and depend on, the seamless integration of computation and electrical/electronic devices. These systems have and will continue to solve grand and complex challenges that enrich our everyday life, transform the way we interact with society, and improve the quality of our environment in which we live. ECE graduates apply their knowledge in many fields ranging from green clean energy generation, electric vehicles, artificial intelligence and autonomous control, fitness and biomedical monitoring, robotics and sensor networks, to 5G communications and beyond. ECE: the future is what we do!

AVERAGE FIRST-YEAR SALARY

$76,591

(Class of 2020)

Engineering Management

Combining a solid engineering education with the fundamental business skills taught by Gonzaga's School of Business Administration, the Engineering Management program develops leaders equipped to handle technical challenges. Each student specializes in one of SEAS's engineering disciplines while also earning a business minor. Connecting technical knowledge with business concepts prepares students to lead projects, introduce new products, or manage research portfolios. Graduates also have the opportunity to earn a Master's in Business Administration by adding a fifth year to their Gonzaga studies.

All SEAS undergraduate programs meet or exceed standards of the Computing & Engineering Accreditations Commissions of ABET.

Mechanical Engineering

Career opportunities abound for Gonzaga's Mechanical Engineering graduates as the program prepares them for both professional practice and for advanced, graduate-level studies. Our faculty bring recognized professional expertise across all areas of mechanical engineering, instilling a broad foundation in mathematical, scientific, and engineering concepts, integrated with design and manufacturing. Lecture, laboratory, and design courses combine theory with practical applications while developing skills with modern tools such as CAD.

Computer Science

Built on a foundation of science, mathematics, and intensive programming, the Computer Science program at Gonzaga offers students a broad range of advanced computer science topics. These include machine learning and intelligent systems, data mining, app development, graphics, networks, databases, cybersecurity, and natural language processing. Exceptional students can assist faculty in their research in sensor networks, human language processing, machine learning for healthcare systems, gerontechnology, knowledge representation and reasoning, human-computer interaction, and software engineering. The department offers concentrations in some of the most exciting areas in computing: data science, software security, and software application development.

FUNDAMENTALS OF ENGINEERING EXAM

92%
PASS RATE

(Class of 2020)
National average: 73%

Senior Design Projects

Seniors are challenged to solve real-world problems. Faculty advisors and industry professionals guide students as they practice and develop the skills needed for successful careers.

The undergraduate experience culminates in a senior design project that involves small teams of students, a faculty advisor, and at least one industry liaison per project. Regional businesses and organizations partner with Gonzaga to provide SEAS seniors real-world challenges and professional relationships.

A growing number of SEAS juniors successfully present their own original ideas for their senior project, adding an innovative dimension to the Senior Design process.

Senior design projects for 2021 have included:

- A device that automatically dispenses medication on a pre-set schedule for people with Alzheimer's
- Complete structural, transportation, and hydraulic assessment of an existing bridge and designs for improvement
- Graphical improvements to a biochemistry teaching app
- A cuff to continuously massage the lower leg, preventing blood from pooling after orthopedic surgery
- Linking facial recognition software to a door smart lock system, letting friends and family enter the home without a key

Visit **gonzaga.edu/cede** to see more projects!

The MySleeve team created a sleeve embedded with motion trackers to collect data on a basketball player's shooting form. The team also designed a desktop application and set up a server to analyze and store the data.

Visit **gonzaga.edu/cede** to see more projects!

Zags Make Connections

"One of the major advantages that the school was able to provide me is hooking me up with a research opportunity with one of the professors. That has really helped me prepare for grad schools by getting some hands-on research experience."

- Matthew Lugo '19, Mechanical Engineering

Right: Matthew holds his Senior Design team's prosthetic hand that adapts to a child's growth.

SEAS Clubs

SEAS proudly supports a wide variety of student clubs and professional organizations, including:

- American Society for Engineering Management (ASEM)
- American Society of Civil Engineers (ASCE)
- American Society of Mechanical Engineers (ASME)
- Gonzaga Without Borders (GWB)
- GU Drone Club
- GU Robotics
- Institute of Electrical and Electronics Engineers (IEEE)
- Material Advantage
- Society of Automotive Engineers (SAE)
- Society of Women Engineers (SWE)
- Steel Bridge Club
- Tau Beta Pi (Engineering Honor Society)
- Women in Computing

Opening in fall 2021, Gonzaga's Bollier Integrated Science & Engineering facility welcomes an era of collaboration and reflection, allowing students and faculty to approach the world's problems without limitations.

CAREER OUTCOMES

Many nationally-recognized businesses have expanded into the Inland Northwest to take advantage of its natural resources, outdoor recreation options, and entertainment opportunities. Those businesses come to campus specifically to meet SEAS students through career fairs, speaker series, and other special events.

Companies hiring recent graduates include:

- Amazon Web Services
- Apple
- Avista
- Boeing
- Duke Energy Corporation
- F5 Networks
- HP
- Intel Corporation
- Kaiser Aluminum
- Lockheed Martin
- Microsoft
- Nike
- Northrop Grumman

"Working around these people who have similar goals and mindset as you, working towards something bigger, it's a really amazing opportunity."

- Claire Norman '19, Computer Science

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