Engineering & Applied Science

A School of Engineering & Applied Science (SEAS) graduate goes beyond the fundamentals of engineering and computer science. SEAS offers many experiences for hands-on learning and applying real-world solutions, both inside and outside of the classroom.

APPLIED SCIENCES WITH A PURPOSE

Faculty encourage 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, robotics, propulsion, computing, electronic circuitry, and machining. The CAD/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.

THE JESUIT DIFFERENCE

Gonzaga University lives its mission of ‘Cur a 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 on 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 make life better: water filters, waste disposal, disaster recovery, 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, structural, geotechnical, transportation, and water resources engineering.

Electrical & Computer Engineering

Students learn to imagine and design electrical systems, devices, and components that improve everyday life and solve complex problems in industry, government, and society. Best known for our faculty expertise and research in electrical energy/power and wireless communication, we also offer opportunities to specialize in electronics, circuit design, and digital signal processing.

Engineering Management

By 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 challenges in virtually any industry. Students unite their technical knowledge with practice in communicating effectively with team members. Each student specializes in one of SEAS’S computer science or engineering disciplines while also earning a business minor. Graduates 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

A broad range of career opportunities open up for Gonzaga’s mechanical engineering students. The emphasis on teamwork in design and manufacturing combines with a broad foundation in a variety of mathematical, scientific, and engineering concepts. Faculty members bring recognized, professional expertise in thermodynamics, fluid mechanics, heat transfer, and control theory. Courses and lab experiences provide practical skills in mathematical techniques, computer-aided design (CAD), and computational fluid dynamics (CFD).

Computer Science

Built on a foundation of science, mathematics, intensive programming, and computer architecture, the Computer Science program at Gonzaga offers students a broad range of advanced computer science topics. These include artificial intelligence, computer graphics, robotics, computer networks, database management systems, cryptography, computer security, and natural language processing. Exceptional students can assist faculty in their research on sensor networks, speech recognition, database management systems, and mathematical modeling.

FUNDAMENTALS OF ENGINEERING EXAM

89% PASS RATE

(Class of 2019)
National average: 72%
Senior Design Projects

Seniors are challenged to solve real-world problems. Faculty advisors and industry professionals challenge them to 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 ideas for their senior project, adding an innovative dimension to the Senior Design process.

Senior design projects from 2018-19 included:

- A ‘smart’ helmet with sensors to trigger safety alerts to cyclists.
- A filter that uses spent coffee grounds to clean water.
- A ‘smart’ traffic grid system to optimize the timing of a city’s traffic lights.

The Pharmaceutical Blockchain team applied cryptocurrency technology to prescription medication data. These seniors from engineering and computer science programs developed a user interface that doctors and pharmacies could access, while keeping data secure enough to meet HIPPA patient protections. The team believes their product is a significant step towards the U.S. government mandate for an interoperable, electronic pharmacy management system by 2023. 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.

Applied Sciences 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
- Women in Computing
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 the Career Fair, 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
- POWER Engineers

“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

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

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