SDSU | College of Engineering

Academic Programs & Areas of Study

Bachelor's Degrees*
Aerospace Engineering
Civil Engineering
Computer Engineering
Construction Engineering
Construction Management
Electrical Engineering
Environmental Engineering
Mechanical Engineering
Bioengineering Emphasis (ME)

Minor
Engineering

Master of Science (M.S.) Degrees
Aerospace Engineering
Bioengineering
Civil Engineering
Electrical Engineering
Environmental Engineering
Mechanical Engineering

Master of Engineering (M. Engr.) Degree

Certificate Program
Rehabilitation Technology

Doctoral Degrees with UCSD
Engineering Sciences:
Bioengineering
Electrical & Computer Engineering
Mechanical & Aerospace Engineering
Structural Engineering

*All Bachelor's Degree programs are accredited by the: Engineering Accreditation Commission of ABET www.abet.org

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Aerospace Engineering

The Bachelor of Science degree program in Aerospace Engineering at San Diego State University excels in teaching and research in traditional and modern Aerospace Engineering including a renewed emphasis on space. The Department has state-of-the-art experimental and computational facilities including low speed and supersonic wind tunnels and a water tunnel. Principal areas of study and research activity include aerodynamics, jet and rocket propulsion, aeroelasticity, structural design and optimization, guidance and control, and space flight mechanics. Many opportunities exist for students to participate in research and co-curricular activities such as the AIAA, Design Build Fly, and Rocket Project. The Department enjoys a close relationship with the local aerospace industry which is the major employer of our graduates.

Civil, Construction & Environmental Engineering

The mission of the Department of Civil, Construction, and Environmental Engineering (CCEE) is to provide a high-quality undergraduate and graduate education as well as advising and other support needed to ensure our students' academic success and preparation for a productive engineering career. We have four majors: Civil Engineering, Construction Engineering, Construction Management, and Environmental Engineering. All our majors directly affect the well-being, health, and safety of all citizens as students learn to design and supervise the construction of buildings, dams, transportation systems, and water and wastewater facilities. Our students have won many awards in regional and national competitions. In addition, CCEE has excellent relations with the local industry partners who sponsor several professorial endowments and offer multiple internships and scholarships. Our alumni hold prominent positions in both private companies and institutions. Our new graduates will greatly benefit from the 1.2 trillion Infrastructure Bill that will create many well-paid jobs.

Electrical & Computer Engineering

The Electrical and Computer Engineering Department at San Diego State University teaches our students the latest technologies in electrical and computer engineering, including embedded system, artificial intelligence, machine learning, wireless communications, digital signal processing, power electronics, power systems, bioelectronics, biomedical devices, digital circuits, VSLI design, controls, multimedia, electromagnetics, and computer networks. The strategic vision of the Department is to provide an education characterized by quality, access, and relevance. Students take a balanced set of courses to obtain a solid foundation in electrical and computer Engineering. The department benefits from the explosion of the local San Diego telecommunication and biotechnology industries, offering our students unique opportunities through internships and industrial sponsored projects on campus. The Department maintains close relations with many top firms including Qualcomm, Apple, Tesla, SDG&E, IBM, Intel, Conexant, Northrop Grumman, Cubic, General Atomics, Boeing, Dexcom, Cymer, Viasat, and many more.

Mechanical Engineering

Mechanical Engineering at San Diego State University provides an education that seamlessly combines engineering theory, analysis, and practice. The curriculum is design-oriented and emphasizes the development of problem-solving skills through hands-on experience in various laboratories, and machine and fabrication shops. Our students are strongly encouraged to get involved in research projects. Participation in student organizations including ASME, Aztec Electric Racing, Baja SAE, Mechatronics, and Biomedical Engineering Society, and in national competitions that feature Formula One teams, solar powered vehicles, and autonomous vehicles contribute to a vibrant educational experience. Graduates from the Department are well prepared to address contemporary challenges in automation and control, bioengineering, energy and sustainability, novel materials, powder technology, mechanics of materials, robotics, and design and manufacturing. Our graduates are employed by aerospace, automotive, biomedical, construction, energy, and manufacturing industries among others, and our alumni hold leading positions in both industry and government.

Research & Lab Activities

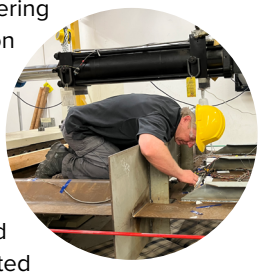
Center for NeuroTechnology

The Center for NeuroTechnology is conducting research on flexible microelectrode neural pads that can be implanted in the brain to record data and/or stimulate specific sites. The core contribution in this area is in developing a new class of sensing and stimulating electrodes based on patternable glassy carbon which is considered the gold standard in electrochemistry. Novel fabrication techniques for integrating these electrodes with a flexible substrate and CMOS processes are being developed. The research integrates advances in microfabrication, recording/stimulation hardware, and neuroscience. A class 100 cleanroom facility is employed for much of the work.

DOE GATE Center for Electric Drive Transportation

Electric Drive Vehicles (EDV) provide an alternative to conventional transportation vehicles with advantages in energy efficiency and environmental benefit. The newly established CEDT will concentrate on research aimed at finding innovative solutions to the challenges in EDV developments. It serves as a platform for the integration of research and development in EDV technologies and the curriculum of the graduate programs. Its primary objective is to enhance the graduate curriculum with updated EDV technologies and to integrate faculty research with the graduate programs. The center will provide an effective environment for the training of automotive engineers who are readily capable of applying advanced technologies in the workplace for the design, development, and marketing of energy-efficient vehicles for daily transportation.

NASSCO Ship Structural Testing and Analysis



Full-scale structural testing and analysis of 8' x 8' swaged steel ship panels is conducted in the SDSU Structural Engineering Laboratory. Pressed in swages add strength and stiffness to the steel panels and cost significantly less than welding on stiffeners. The lab has a unique, self-reacting test frame designed by Dr. Robert Dowell and his SDSU team which can produce over one million pounds of applied force. This research is funded by NASSCO Shipyard and the National Shipbuilding Research Program (NSRP). Because of the success of the structural testing and analysis performed at SDSU Structural Engineering Laboratory, NASSCO has a long-term multi-million dollar cooperation plan with SDSU, which will bring better and more cost-effective shipbuilding technology to American shipyards. Based on the completed structural tests at SDSU, swage panels have been approved for use on commercial ships nationally and internationally, as written into international ship design specifications. The current work includes fatigue testing (repeated tensile and compressive stresses for up to 100,000 cycles) of ship panels as additional verification required by the US Navy in order to also adopt these new panel types for their ships.

Center for Industrial Training and Engineering Research (CITER)

The Center for Industrial Training and Engineering Research (CITER), structures and enhances collaboration between industrial partners and SDSU. The primary objective is to connect SDSU's Engineering departments, faculty members, undergraduate and graduate students with engineers and staff scientist of local industry. Through industry funded projects and scholarships, the students get first-hand training in an industry environment and are ready to join the workforce upon completion of their studies. CITER is eager to work with enthusiastic students and engineering companies in the San Diego area.

The Powder Technology Laboratory

The Powder Technology Laboratory is currently involved in a variety of research projects on processing of powder materials including fundamental research on sintering and multi-scale analysis of various powder processing techniques. The projects conducted by the laboratory are based on experimentation and computational modeling of powder processing, including novel ceramic, metallic, and composite material synthesis with applications in fuel and solar cell technologies, fabrication of bioimplants, development of novel components for wireless devices, and 3D printing of complex shape powder parts.

Blue Gold Area of Excellence

The Blue Gold Area of Excellence combines campus-wide expertise in water research to address issues such as rapid urban growth, agricultural water transfers, extreme events, and cross-border issues, that impact water resources in water-scarce regions now, and in years to come. SDSU College of Engineering faculty, Drs. Natalie Mladenov and Alicia Kinoshita, have led efforts to study water quality and hydrologic response to restoration in urban watersheds, such as SDSU's Alvarado Creek on campus.

Professional Societies & Student Organizations

3D for Everyone (3D4E)

Alpha Omega Epsilon (AOE)

American Institute of Aeronautics and Astronautics (AIAA)

American Public Works Association (APWA)

American Society of Civil Engineers (ASCE)

American Society of Mechanical Engineers (ASME)

American Water Works Association (AWWA)

Associated General Contractors of America/ Construction Management Association of America (AGC/CMAA)

Aztec Baja - Society of Automotive Engineers (Baja SAE)

Aztec Electric Racing - Society of Automotive Engineers (AER)

Aztec Council on Systems Engineering (ACOSE)

Aztec Robotic Technologies (ART)

Biomedical Engineering Society (BMES)

Chi Epsilon (XE)

College of Engineering Student Council (CESC)

Design Build Fly (DBF)

Engineers Without Borders (EWB)

Institute of Electrical and Electronics Engineers (IEEE)

Institute of Transportation Engineers (ITE)

Mechatronics

National Society of Black Engineers (NSBE)

Rocket Project

Society of American Military Engineers (SAME)

Sigma Gamma Tau (SGT)

Sigma Phi Delta (SPD)

Society of Asian Scientists and Engineers (SASE)

Society of Hispanic Professional Engineers (SHPE)

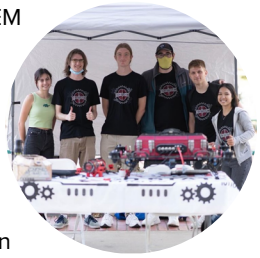
Society of Women Engineers (SWE)

Tau Beta Pi (TBP)

SUPPORT

The **SDSU Center For Student Success in Engineering (CSSE)** is located in the College of Engineering Building, Room 216 and offers an integrated range of services designed to help engineering students meet graduation requirements. Services include: major advising, peer advising, peer tutoring, and internship/career support. For more information, please e-mail: csseadvising@gmail.com or visit the website at csse.sdsu.edu

EXTRACURRICULAR ACTIVITIES



The **SDSU Mechatronics Club** is a student organization whose goal is to create an environment that not only promotes STEM education, but does so in a way that provides students with hands-on experience building autonomous robots within a team. The SDSU Mechatronics Club is broken down into three divisions: Apprentice Program, RoboSub, and RoboAir. All three divisions provide students with a diverse educational habitat in which to build skills in engineering, time management, and team-based cooperation. The Mechatronics Club is an interdisciplinary organization comprised of electrical, mechanical, software, and business teams that work in collaboration to compete in global competitions and promote STEM education at San Diego State University, the United States of America, and the world.

Student members of the **Rocket Project** design, build, test, and fly advanced rockets. Since its inception in 2003, students have successfully tested and launched multiple rockets, including liquid propellant, hybrid and solid rockets, to altitudes over 12,000 feet. Students learn manufacturing techniques, systems and ground testing, electronics and avionics, structures, design and analysis, aerodynamics, recovery systems and more.

Aztec Electric Racing is a student organization that builds electric race cars and participates in regional, national and international competitions. The electric cars are built over a period of about a year and the team effort provides real-world experience to students preparing to enter the engineering workforce. All aspects of engineering practice, including design, manufacturing, testing, marketing, management, and finances are integrated into the team effort. The organization is built around a concept of a fictional manufacturing company.

The **Pacific Southwest Conference** is **ASCE's (American Society of Civil Engineers)** annual student chapter competition to test a variety of university students on their civil engineering skills. At the Conference, there are many different competitions such as the Concrete Canoe designed to test their ingenuity, knowledge of engineering subjects, and physical mettle. For the Concrete Canoe Competition, students have to design and fabricate a buoyant canoe made of concrete.

Community Relations & Outreach Programs

Mathematics Engineering Science Achievement (MESA)

Mathematics Engineering Science Achievement (MESA) supports students to become the engineers and scientists urgently needed in the U.S. Since 1982, SDSU's College of Engineering has partnered with MESA and shares MESA's vision to see California's STEM Workforce reflect the diversity of its population. MESA is uniquely positioned to provide support at all educational levels from middle school through degree completion; with its San Diego College Prep Program, Imperial Valley College Prep Program and Undergraduate Program. The program's success comes from a combination of: academic support [Advising, Scholarships], project based learning [Local & Regional Competitions], supportive student communities, career preparation, industry exposure and alumni engagement [Shadow Day and Industry Training Academy]. This statewide program serves over 24,000 college prep, community college and university level students throughout California. MESA is nationally recognized for its innovative and effective programming in STEM fields; and its long history with industry and its vast network of alumni are key components. For more information, please visit the website at mesa.sdsu.edu

SDSU Women in Engineering

The **SDSU Femineer®** & **Women in Engineering (WE) Programs** support and grow the K-12 outreach locally and nationwide as part of the college's outreach and student success efforts. The WE Program offers various programs and events to engage and provide support for current engineering students and faculty to create a welcoming community within the College of Engineering to help them succeed at SDSU in addition to the opportunity to network and be mentored by local SDSU alumnae and industry representatives. The Femineer® Program offers student experiences as well as curriculum and teacher professional development for college and career technology education in the areas of engineering and computer science for K-12 STEM education. The WE and Femineer® team partners with K-12 schools and districts, post-secondary schools, workforce development agencies and business partners.

Troops to Engineers

The **Troops to Engineers (T2E) Program** is a unique program currently offered only at SDSU for veteran students in undergraduate and graduate engineering programs. This program provides custom career assistance for students seeking to improve their professional development skills, find a paid internship and secure an engineering specific job upon graduation from SDSU. The T2E Program is funded by Northrop Grumman and Boeing and has been successfully growing since 2011. Students who participate are provided with exclusive support opportunities, including: professional network events, interview preparation, resume building, recruiting events, student tours at engineering facilities, mentoring, tutoring and connecting with SDSU and T2E Alumni and many more. T2E offers an ENGR 101 course specifically designed to introduce Student Veterans to the program, and assist them in achieving academic and professional success. For more information, please e-mail: jimes@sdsu.edu or visit the website at sdsutroops2engineers.org

Diversity, Equity & Inclusion

The **American Society for Engineering Education (ASEE) Diversity Recognition Program** has granted the SDSU College of Engineering the Bronze Level Award with exemplar status for 2019-2021. This program is a national effort to publicly recognize engineering and engineering technology schools and colleges for their success in building a diverse workforce with diversity, equity and inclusion at the forefront.

Ways to Give to SDSU Engineering

Recognized for its world-class education, innovative programs, pioneering research and hands-on Capstone Design Program, the College relies on philanthropic support for students, faculty, student organizations, and research.

- Sponsor a Capstone Project
- Participate in the Annual Day of Giving
- Make a Gift of Appreciated Stock
- Establish an Endowment
- Make a Planned Gift
- Utilize Corporate Matching Gift Programs
- Make a Gift of Real Estate
- Make a Gift Utilizing the IRA Rollover

For more information, please email Kate Carinder, Senior Director of Development at kcarinder@sdsu.edu