



High Tech Fair 2020 Student Handbook

2020 Exhibitors (in alphabetical order)

AIAA (American Institute of Aeronautics and Astronautics) San Diego
ASML
Blue Latitudes
Brainleap Technologies, Inc.
Bristol-Myers Squibb
Center for Energy Research
Center for Ethics and Technology
City of San Diego - Public Utilities
City of San Diego-Pure Water San Diego Program
City of San Diego- Ocean Monitoring Program
Cobham Advanced Electronic Solutions
Collins Aerospace
County of San Diego Vector Control Program
Creating Coding Careers for San Diego
DermTech, Inc.
The Energy Coalition
Fleet Science Center
General Atomics Energy/ Fusion Group
Heron Therapeutics
IEEE Consultants
LabKey
The LEAGUE of Amazing Programmers
Lockheed Martin



Miramar and City College Music Production
National Park Service - Cabrillo National Monument
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San Diego Center for Ethics in Science and Technology
San Diego County Credit Union
San Diego Fire Department
San Diego Mesa College STEM Conexiones
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Sharp Grossmont Hospital
Society of Civil and Structural Engineers
Solar Turbines
ThoughtSTEM, LLC
UCSD Center for Energy Innovation
UCSD CREATE
UCSD National Society of Black Engineers (NSBE)
UCSD Neuroscience Outreach
UCSD Project in a Box

Booth Descriptions & Student Prep Questions

**Note that not all exhibitors provided a description or questions; in that case we omit the categories*

Part of the fun and benefit of High Tech Fair is direct access to some of the most impressive and large local companies in San Diego. Exhibitors want to talk to you about what they do, and you never know where this conversation can go. Ask about internships, ask about why they do what they do, and most importantly, ask what you are curious about! Don't know what chemical engineering is, only one way to find out. Below we have included profiles and suggested questions for most of the booths. These questions are suggestions to get your juices flowing, don't be limited by them!

AIAA (American Institute of Aeronautics and Astronautics) San Diego

The American Institute of Aeronautics and Astronautics (AIAA) is a professional society for the field of aerospace engineering. The AIAA is the U.S. representative on the International Astronautical Federation and the International Council of the Aeronautical Sciences. In 2015, it had more than 30,000 members among aerospace professionals worldwide!

- What does AIAA do for schools and nationally?
- How can AIAA connect me to aerospace companies?
- What events does AIAA hold locally?

ASML

ASML is an innovation leader in the semiconductor industry. They provide chipmakers with everything they need- hardware, software and services-to mass produce patterns on silicon through lithography.

- What is ultraviolet lithography?
- What is a semiconductor?
- How does one get into this field?



Blue Latitudes Foundation

The Blue Latitudes Foundation is an organization focused on charitable, educational, and scientific purposes. Their mission is to elevate the traditional concept of ocean stewardship by uniting government, industry and the community to work together to conserve our oceans, in doing so, this foundation strives to explore innovative solutions to traditional marine conservation challenges. Some of the Earth's greatest opportunities for conservation lie at the intersection of industry and the environment. Given the human demand for ocean resources, they aim to broaden the dialog on

traditional ocean conservation practices to find ways to use our oceans without using them up!

- What type of projects do you work on?
- How did you get started in your career?
- What is your favorite part about your job?

Volunteer or Internship Opportunity: Yes! They have unique opportunities for all ages, from graduate level internships to opportunities to join dive outings to beach clean-up.

Facility Walk-thru/Tours: No

BrainLeap Technologies, Inc.

BrainLeap trains attention skills through gaze-driven training games. Based on 30 years of academic research, their suite of video games improves attention skills and reduce distractibility, which supports better academic performance and improved executive function in children with attention challenges (e.g. ADHD and autism). They are experts in the eye movement system and attention development. A theoretical physicist also works at BrainLeap, focused primarily on software development and hardware integration. At this booth, students can play the attention training games which are controlled with the eyes via an eye tracker. In addition to experiencing attention training, they can learn why attention is a foundational skill for self-control, working memory, and inhibitory control -- all important skills for learning!

- Why do you use your eyes to control the games?
- What inspired you to work for (or create) this company?
- What evidence do you have that the games really help people?

Volunteer/ Internship Opportunities: Have taken on a High School Student volunteer in the past. If interested, ask about it!

Facility Walk-thru/Tour: Not currently.

Bristol-Myers Squibb

At Bristol-Myers Squibb, they work every day to transform patients' lives through science. They combine the agility of a biotech with the reach and resources of an established pharmaceutical company to create a global leading biopharma company powered by talented individuals who drive scientific innovation. In our San Diego labs, they discover, develop and commercialize medicines for cancer and inflammatory disorders.



At this booth you will be exploring biology and chemistry as is done in their labs at BMS. You will also be learning about cancer, immunotherapy and inflammation drug development.

- What inspired you to work on this kind of research?
- What is involved when you start to create a drug?
- How do chemistry and biology work with a drug development environment?

Volunteer or Internship Opportunity: They offer internships to college students

Facility Walk-thru/Tours: Yes

Teacher Resources: Yes

Center for Energy Research (UCSD)

The Center for Energy Research creates solutions to the growing challenges of energy supply and utilization in our society. At their booth you will find hands on fun using plasma balls and making lightning using Tesla Coil and cans, light bulbs and fluorescent tube lights. Electricity board showing effect of non-renewables. Solar panels. You will also engage with hands on experiments showing the physics of electric motors and generators.



- What are some careers in alternate, cleaner methods of electricity generation?
- What is plasma and how is it related to producing energy?
- What is an electric motor and how can you build a simple one?

Volunteer or Internship Opportunity: Available to UCSD students

Facility Walk-thru/Tours: Yes

Teacher Resources: Yes

Center for Ethics and Technology

The Ethics Center provides community forums to promote science that benefits everyone. They will be presenting our free after school program and student opportunities. They will engage with students on what it means be ethical in research. We will focus on our student essay competitions, current and past programs, and potential ethical issues in current research.

- What is ethics and how does it relate to tech?
- Why is it important to talk about the negative aspects of science to the public and not just the science community?
- How can we make sure ALL science is ethical?



City of San Diego- Public Utilities Department

The City of San Diego Public Utilities Department has over 1,600 employees who are responsible for ensuring quality, reliability, and sustainability of water, wastewater and recycled services for the benefit of the ratepayers and residents served.

There are many scientists that work at the Public Utilities Department. They include chemists, biologists, engineers (mechanical, electrical, civil, structural, chemical), laboratory technicians, etc.

The booth will have fun activities and exhibits and handouts/giveaways that promote what not to put down the drain.

- What is your job title and what types of things do you do in that position?
- Where do you work?
- What do you like most about your job?



Volunteer/ Internship Opportunities: Yes! There is a minimum age of 13 for mentorships. The internship requires that the intern be enrolled in school.

Facility Walk-thru/Tour: Yes! The City offers tours to students and teachers of all grade levels. Must sign-up for/ schedule.

City of San Diego- Pure Water San Diego Program

Pure Water San Diego is the City's phased, multi-year program that will provide one-third of San Diego's water supply locally by 2035. The Pure Water Program will use proven water purification technology to clean recycled water to produce safe, high-quality drinking water. Visit the Pure Water San Diego booth to learn more about water purification technology and play the "Water You Know" quiz for a chance to win a prize.

- Where does San Diego's water come from?
- What careers exist in purifying water?
- What is the difference between recycled water and potable water?

City of San Diego- Ocean Monitoring Program

The Public Utilities Department's Ocean Monitoring Program is the preeminent leader in studying the effects of our regional treatment processes on the marine environment. They will have video footage of operations at sea and some interactive ocean sampling equipment and scientific posters on display as well as preserved specimens of fish and invertebrates.

- Why does the ocean need monitoring? Who does that?

- What happens to the City of San Diego's sewage after it is treated at the sewage treatment plant?
- How does climate change affect marine invertebrate populations?

Volunteer or Internship Opportunity: Internship program for students currently enrolled in college level courses.

Facility Walk-thru/Tours: They have an annual open house in March. Keep watch for this year's dates.

Cobham Advanced Electronic Solutions

Cobham Advanced Electronic Solutions, Inc manufactures search and navigation equipment. CAES provides wireless, audio, video and data communication equipment, including satellite communications, defense electronics, air-to-air refueling, life support, and aviation services.

- What are defense electronics?
- What is air-to-air refueling?
- What steps should I take to get into this field?



Collins Aerospace Systems

Collins Aerospace Systems is one of the world's leading providers of aerospace systems and services for large commercial aircraft. Collin's booth will have various airplane components, material examples, component puzzles. These will all show the various stages it takes to create a part, and what different materials contribute towards the overall structure. They specialize in nacelles and will be focusing on this component.

- How do you get a career with Collin's?
- What is a nacelle?
- What are ways you can make an airplane stop?
- How do you make planes quiet?

County of San Diego- Vector Control Program

The San Diego County Vector Control Program is a countywide program that monitors vectors and the diseases that they carry. Within the company you can find scientists such as Ecologist, Disease Research Scientist, Veterinary Pathologist and more! They will be presenting information about mosquitoes and the diseases they transmit. Students will learn about mosquito biology, methods of disease transmission, and

different mosquito control strategies. They will be able to get a closer look at the stages of the mosquito life cycle under the microscope.

- What is a Vector and what is an example of a vector in San Diego county?
- What are some vectors common in the San Diego area?
- What kinds of careers are available through this program?
- What types of diseases does the vector disease and diagnostics lab test for?

Volunteer/ Internship Opportunities: No

Facility Walk-thru/Tour: No

Teacher Resources: Yes

Creating Coding Careers for San Diego

Providing free community workshops to engage with out-of-school-youth and provide one month of low-cost training in the evening as a pre-cursor to admission to other programs. Offering paid and unpaid work experience for in-demand software engineering and technical occupations in the greater San Diego region.

- How do you get involved with Creating Coding Careers for San Diego?
- What is the most rewarding part of working in this field?
- What type of knowledge or skill must you have to work in this field?



DermTech, Inc.

DermTech is the global leader in molecular dermatology, bringing precision medicine to the diagnosis and treatment of skin disease. Their organization markets and develops products that facilitate the early detection of skin cancers, assess inflammatory diseases, and customize drug treatments. DermTech analyzes skin biopsy samples collected non-invasively using an adhesive patch rather than a scalpel. Their organization consists of certified lab scientists who have a background in genomics. At their booth you can expect to learn how RNA and DNA can help diagnose skin diseases.

- What is your test and how does it work?
- What is RNA?
- What does a day in the life of a geneticist look like?

Volunteer/ Internship Opportunities: Yes! Starting at age 16.

Facility Walk-thru/Tour: Yes! This can be organized.

The Energy Coalition

As a social change organization, The Energy Coalition (TEC) helps create an abundant and healthy world by inspiring others to become energy architects of our sustainable future. Working through their three core service areas – smart energy solutions, engagement and education, and energy policy leadership – they collectively achieve valuable environmental savings that benefit everyone. At their booth they will be exploring circuits - insulators and conductors: Participants will be able to experiment with simple circuits to light up a light bulb. You will also introduce various common items into their circuit to test for electrical conductivity.

- What do you like about working in energy?
- What is an insulator? Why doesn't it allow the light bulb to light up?
- How are you making an impact on the environment?

Volunteer/ Internship Opportunities: Summer internships for High School Students

Facility Walk-thru/Tour: In partnership with the SDG&E, TEC offers Sustainability Field Trips to the SDG&E Energy Innovation Center.

Teacher Resources: Yes

General Atomics Energy/Fusion Group

States of matter, magnetism, and electromagnetic radiation will highlight the GA booth. Attendees will interact with floating magnets, electrical sparks, liquid nitrogen, and more. We will discuss the process of fusion and how we operate the nation's largest magnetic confinement device, the DIII-D Tokamak, right here in San Diego. Come and join us for some FUN-damental science!



- What is the most prevalent state of matter in the universe?
- What is the process through which a bar of soap expands in a microwave oven?
- What does a typical workday look like for you?

Heron Therapeutics

Heron Therapeutics is a Biotech company whose mission it is to improve the lives of patients by developing novel, best-in-class treatments to address some of the most important unmet patient needs. Within the organization you can find scientists such as Analytic and Formulation Chemists. At this booth you can expect to learn how Heron is helping to address the Opioid crisis in the US, and that you do not have to be a

scientist or a doctor to be part of the exciting work being done in the Biotech and Pharma industry.

- How are drugs developed and why are they so expensive?
- Why are opioids bad for you?
- What should I study/major in to work in the Biotech/Pharma Industry?



Volunteer/ Internship Opportunities: We offer paid internships to college students

Facility Walk-thru/Tour: Not currently, but potentially in the future

Teacher Resources: Yes

IEEE Consultants

The IEEE Consultants' Network of San Diego (CNSD) is comprised of independent technology consultants who are specialists in all forms of electronics, communications, chip design, computer software, defense technology, electro-mechanical hardware, power systems, new product development, quality assurance, reliability, technology management, business development, and intellectual property law. Electrical and mechanical demonstrations. Motors, magnetic, LEDs vibration and more! At this booth you can expect demos of electrical phenomena!

- What is the difference between a Volt and an Amp?
- What kind of careers are there in this field?
- What skills/knowledge do these people have to do this kind of work?

LabKey

LabKey makes software to help researchers solve major public health problems, conduct studies and improve human health. Within their organization are biologists, geneticists, and computer scientists. At this booth you can expect to learn how to design and build software based on client needs. This will be an interactive activity.

- Tell me about the most exciting problem you had to solve.
- Why is your work important to the community and the world?
- If you could solve any global health problem, what would it be and why?

Volunteer/ Internship Opportunities: Generally, only for undergraduates in their Sophomore or Junior Year.

The LEAGUE of Amazing Programmers

The League of Amazing Programmers prepares young people for 21st-century technology jobs by teaching after-school computer programming and electrical engineering. Our vision is a world where ALL youth have access, support, and opportunity to lead in today's technology-driven society. Within the organization there are software engineers and electrical engineers. At this booth, you can expect to participate in hands-on coding activities, play games created by their students, learn about their after-school program and weekend workshops and classes.



- What is your favorite thing about coding in Java?
- Do programmers work alone in dark cubicles?
- Have you ever created a video game or an app?

Volunteer/ Internship Opportunities: Yes, volunteers must be at least 18 years old. We have a limited number of internship opportunities for current League students (grades 5-12)

Facility Walk-thru/Tour: Yes, tours can be arranged by appointment only. Contact info@jointheleague.org for details.

Lockheed Martin

Lockheed Martin is a global security and aerospace company that employs approximately 105,000 people worldwide and is principally engaged in the research, design, development, manufacture, integration and sustainment of advanced technology systems, products and services. Helping the future arrive is what they do. Lockheed-Martin solves the great problems of our times. They create the innovative technologies that define eras. While no one knows what's going to change the world next, they're probably already working on it. They consist of many different types of engineers! At this booth you can expect to test your rocket science knowledge, build and test your very own rocket, and have an opportunity to win a prize if you can craft an aerodynamic airplane that can hit a target!

- How many kinds of engineers work at Lockheed Martin?
- What is the proper name for field of rocket science?
- Why do rockets have fins?

Volunteer/ Internship Opportunities: Internships and apprenticeships starting at age 16.

Facility Walk-thru/Tour: For larger events, yes.

Miramar and City College Music Production

San Diego Community College Music Production Programs at San Diego City College and Miramar College bring you engineering, production, and technology in the recording industry. Their goal is to help students become recording engineers! At this booth you can expect to learn how to make a basic microphone, the chance to record your voice, manipulate and create new sounds, loops, and beats!

- What kinds of technology are used in making and recording music?
- What kinds of skills are CRITICAL in music production and recording?
- If music is an art form, why is college education important when making and recording music?

Volunteer/ Internship Opportunities: No

Facility Walk-thru/Tour: Campus orientations available.

National Park Service- Cabrillo National Monument

The National Park Service cares for special places saved by the American people so that all may experience our heritage. San Diego's only National Park is Cabrillo National Monument, which is home to a wealth of cultural and natural resources like our historic Old Point Loma Lighthouse and Rocky Intertidal Zone (tidepools). Cabrillo National Monument employs life scientists - such as biologists, ecologists, and environmental scientists. At this booth Cabrillo scientists will demonstrate the real scientific methods employed to inventory and monitor our Rocky Intertidal (tidepool) species with a hands-on activity.

- What is a Conservation Biologist?
- How do you preserve and protect the species at Cabrillo National Monument?
- What is the biggest challenge you have had to overcome?

Volunteer or Internship Opportunity: Yes! Volunteers-in-Parks can be any age however, if they are a minor, they must have a parental guardian with them.

Facility Walk-thru/Tours: Yes!

National University

National University (NU) is a private university with its headquarters in La Jolla, CA. Founded in 1971, National University offers academic degree programs at campuses located throughout the state of California, one campus in Nevada, and online. Programs at National University are designed for adult learners. On-campus classes are typically concentrated to four weeks, scheduled on weeknights with an occasional Saturday. Online classes may include streaming video, interactive media, and real-time online classrooms.

- What types of programs does National University offer?
- Are there any STEM clubs within your university?

- Are there any prerequisites to getting into your university?

NOAA (National Fisheries & National Weather Service)

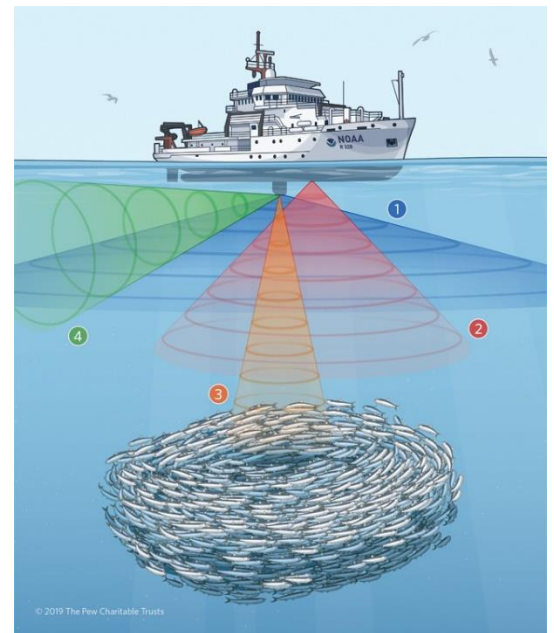
From daily weather forecasts, severe storm warnings, and climate monitoring to fisheries management, coastal restoration and supporting marine commerce, NOAA’s (National Oceanic and Atmospheric Administration) products and services support economic vitality and affect more than one-third of America’s gross domestic product. NOAA’s dedicated scientists use cutting-edge research and high-tech instrumentation to provide citizens, planners, emergency managers and other decision makers with reliable information they need when they need it. Their booth will highlight technologies for studying marine species and ocean science. They will have examples of tools they’ve developed at their labs, and how these can be used to help us learn more to manage, protect, and better understand our ocean environment.

Ask NOAA Fisheries

- Why is the government in the business of studying ocean animals?
- Why are new technologies important for studying animals? Why is the government investing in these technologies?

Ask NOAA Weather

- How do I get a job at NOAA, what did you study in school?
- How could climate change and extremes change the southern California weather?



Volunteer/ Internship Opportunities: No

Facility Walk-thru/Tour: Occasionally, please ask for more details if interested

Teacher Resources: No

Northrop Grumman

Northrop Grumman offers an extraordinary portfolio of capabilities and technologies that enable them to meet and exceed the current and future needs of our customers. They address emerging global security challenges that are critical to the defense of our nation and its allies. Within their organization you can find Cyber scientists, engineers, IT and info security, and more. At this booth you can expect to create your own custom name

badge using the CNC router machine, as well as participate in a wind tunnel experiment, view a robotics demo, and partake in a modular escape room box.

- What is a type of engineer that could work for your company?
- What is something you are excited about at your work?
- What would I study if I wanted a career in aerospace and defense?

Volunteer/ Internship Opportunities: Typically offered to college students.

Facility Walk-thru/Tour: No

Teacher Resources: Yes, at the booth

oSTEM at UCSD

oSTEM is a nationally recognized organization that is geared towards the personal and professional development of LGBTQIA+ students who are interested in Science, Technology, Engineering, and Mathematics through social, educational, professional, and outreach programming. It is also focused on helping students throughout UC San Diego connect to a broader community of queer folks (students and professionals) whose academic interests lie in similar fields.



- What are some of the things you do as a group throughout the school year?
- What do you find to be most challenging as an LGBTQIA+ identifying person in the field of science?
- What is the best part of being in oSTEM?

Poway High School Robotics- Team Spyder

These teams will be letting people drive their competition robots, as well as explaining how they work and the games they were designed to play. They will also be talking about their design process, and showing how we design, build and program the robots, as well as how you can get involved. This team consists of engineers helping students to learn the necessary skills to build robots!

- What does FIRST stand for?
- What are engineers and scientists considered to be in FIRST.
- What languages can a robot be programmed in?

Volunteer/ Internship Opportunities: No

Facility Walk-thru/Tour: Yes! Engineering Academy and Robotics Facilities Tours.

Qualcomm

Qualcomm Incorporated is a multinational semiconductor and telecommunications equipment company that designs and markets wireless telecommunication products and services. It derives most of its revenue from chipmaking and the bulk of its profit from patent licensing businesses. They are engineers, scientists and business strategists. They are from many different countries and speak many different languages. They come from diverse cultures and have unique perspectives. Together, they focus on a single goal—inventing breakthrough technologies that transform how the world connects, computes, and communicates.

- What are some of the products that Qualcomm engineers have invented?
- What is the best part of your job?
- What's the big deal about 5g?

ROV Tour

They are a STEM/STEAM focus company using underwater remotely operated vehicle robotics to inspire people to discover the underwater world! At this booth you can expect to learn about ROVs and how they work, You may even get a chance to see one live!

- What are the skills needed to build an ROV?
- How much does an ROV cost?
- Where have you taken the ROV?

San Diego American Association for Laboratory Animal Science

The American Association for Laboratory Animal Science (AALAS) is a membership association of professionals employed around the world in academia, government, and private industry who are dedicated to the humane care and treatment of laboratory animals, as well as the quality research that leads to scientific gains that benefit people and animals. At this station you will have a chance to try out PPE and learn about the different routes of compound administration. You will also have an opportunity to gain career advice, as well as information about animal welfare in the laboratory.





- Are there laws and/or organizations that provide oversight and guidelines to assure the safety and wellbeing of animals in research?
- What type of new technologies are being utilized to continue the support of the 3 R's (Replacement, Reduction, Refinement) within animal research?
- What is the most interesting part of your job?

Volunteer/ Internship Opportunities: Yes, minimum age is 16.

Facility Walk-thru/Tour: They can help refer you to sites that offer school programs and tours.

Teacher Resources: Yes

San Diego Center for Ethics in Science and Technology

The Center for Ethics in Science & Technology brings the public and scientists together to explore how science can best serve society. Through forums, projects, and resources, the Center gives all stakeholders an opportunity to share perspectives on the ethical implications of new developments in science and technology. Employing many different types of scientists!

Within the organization are many different types of scientists. At this booth you can expect to learn about new and innovative science and technology. You will have an opportunity to voice your concerns and perspectives on potential ethical implications in scientific research. They want to hear your thoughts on the future of science!

- Who is responsible for making decisions that may have ethical consequences?
- Are there any consequences when someone produces unethical research?
- Why would someone be unethical in his or her research?

Volunteer/ Internship Opportunities: Yes, for High School students and older.

Facility Walk-thru/Tour: Not currently

Teacher Resources: Yes

San Diego County Credit Union

San Diego County Credit Union® is a full-service financial institution. SDCCU® offers FREE Checking with e-Statements, direct deposit, Visa® credit and free debit cards, certificate and money market accounts, auto and home loans, an array of e-Services and much more. Anyone who lives or works in San Diego, Riverside and Orange counties is welcome to open an account. SDCCU is a not-for-profit credit union wholly owned and operated by its members. At this booth you will get a chance to learn about Financial Wellness.

- What types of careers are there in the banking industry?
- How many branches and employees does SDCCU have?

- What is the difference between a credit union and a big bank?

Volunteer/ Internship Opportunities: No

Facility Walk-thru/Tour: At times, yes, at our branches. They sometimes host classrooms to talk about the banking profession.

Teacher Resources: Yes

San Diego Fire Department

The City of San Diego's Fire-Rescue Department encompasses all fire, emergency medical, lifeguard and emergency management services. This includes 9-1-1 services, fire inspections, permits and community education.

- What are the steps to fighting a fire?
- What technology is involved in firefighting?
- How can I become involved in the emergency medical field?



Volunteer/ Internship Opportunities: Yes, Fire Cadets program starts at age 16

Facility Walk-thru/Tour: Yes, we facilitate tours of our fire stations

Teacher Resources: Yes

San Diego Mesa College STEM Conexiones

STEM Conexiones is a grant funded program that seeks to increase the retention rate of Hispanic and low-income students in STEM disciplines. The STEM Conexiones Mentorship Program is a component of the grant that offers students the opportunity to become involved in the STEM Community while receiving mentorship from faculty or mentorship from peers. They will be presenting on uses of hydraulics, A hydraulic cylinder is a mechanical actuator that is used to give a unidirectional force through a unidirectional stroke.

- What resources do you have in STEM?
- Why is mentorship important, how do I find a mentor?
- What is hydraulics and how do it work?

Scripps Research

Scripps Research is ranked the most influential institution in the world for its impact on innovation. They expand basic knowledge in the biosciences and use these fundamental advancements to develop profound innovations that improve wellbeing. Their researchers lead breakthrough studies that address the world's most pressing health

concerns. They are accelerating the creation and delivery of medical breakthroughs to better human health around the globe.

- What steps should I take to get into your program?
- What types of research do you conduct?
- What has been the biggest discovery that Scripps has made?

SDG&E (San Diego Gas and Electric)

San Diego Gas and Electric provides natural gas and electricity to San Diego County and southern Orange County in southwestern California, USA. It is a regulated public utility that provides energy service to 3.3 million consumers through 1.4 million electric meters and more than 840,000 natural gas meters in San Diego and southern Orange counties.



- What types of scientists work for your organization?
- What is an electric meter and how does it work?
- What is natural gas and where does it come from?

Sharp Grossmont Hospital

East County San Diego's largest hospital, with 540 beds and the busiest Emergency Department in all of San Diego County with over 100,000 patient visits a year. Consisting of scientists such as lab technicians, medical doctors, registered nurses, pharmacists and more. At this booth you can expect to learn about the medical field and play a mock diagnosis game where you must use critical thinking skills to learn about infection prevention.

- What type of degree do you need for your job?
- What's your favorite part of your job?
- Why did you choose your career?

Volunteer/ Internship Opportunities: Yes, beginning with high school students.

Facility Walk-thru/Tour: Yes

Teacher Resources: Yes

Society of Civil and Structural Engineering

The Society of Civil and Structural Engineers (SCSE) is the San Diego student chapter of the American Society of Civil Engineers (ASCE) and the Structural Engineers Association of San Diego (SEAOSD). Our purpose is to supplement the engineering education of students, promote the personal and professional development of our members, and

improve the community of which we are part through outreach and community service. We accomplish this mission through various professional and social events, project teams, and outreach programs.

- What requirements are there for joining you group?
- What types of opportunities are there for students that are a part of your group?
- What types of careers are there in Civil and Structural Engineering?

Solar Turbines

Solar Turbines is excited to show visitors to their booth what they do to generate energy for hospitals, universities and factories around the world. Students will have the opportunity to learn the different parts of a gas turbine, see how electricity is generated using rotational energy and take home their very own small battery generator. We hope you'll make an energetic stop by...but if you can't bring the energy, don't worry, they'll show you how to!



- What is a gas turbine?
- What are the different kinds of engineers at Solar Turbines?
- How do you like working at Solar Turbines, what is the favorite part of your job?

Volunteer/ Internship Opportunities: Yes, typically at the college level (18+)

Facility Walk-thru/Tour: Yes, we have multiple opportunities.

Teacher Resources: No

ThoughtSTEM

They will be running a booth with a 3-5 Player Minecraft-themed Racing Game made with homemade running pads, reminiscent of DDR pads. The homemade DDR pads will be hooked up to a Makey Makey which will be controlling a simple racing video game that we'll project onto a large projector screen for a crowd to watch. They will teach local students how to code the game that's on the big projector screen there at the event.

- How many programming languages are there?

- What's the trick to being a great coder?
- What did scientists recently learn about how your brain processes computer programming languages?

Volunteer/Internship Opportunities: Yes! ThoughtSTEM offers a summer internship. Students must be 17-18 years old and entering at least senior year of high school the following school year.

Facility Walk-thru/ Tour: No

Teacher Resources: Yes

UCSD Center for Energy Innovation

Our vision is to foster research and build visibility for UCSD as an internationally recognized center of excellence in energy research and to solve the energy challenges of the 21st century. Our work spans from fundamental physics and chemistry of nuclear fusion, lasers, and advanced materials to renewables grid integration research on battery energy storage, solar inverters, and solar forecasting.

- What is nuclear fusion?
- What are the requirements for joining your program?
- What is the most exciting part of being in this group?

UCSD CREATE (Center for Research on Educational Equity, Assessment, and Teaching Excellence)

The CREATE STEM Success Initiative (CSSI) is a visionary collective effort linking UC San Diego faculty, staff and students and the San Diego education community in a shared effort to support K-20 STEM (science, technology, engineering and mathematics) education in the region. At this booth, you will get a chance to interact with preserved animal specimens from the San Diego Natural History Museum. The CREATE staff will teach you about local San Diego Wildlife, from small critters, like insects and reptiles to large mammals.

- What do you do at CREATE?
- How can I learn more about what CREATE does?
- How can I get involved at CREATE?

Volunteer/ Internship Opportunities: Yes, students can ask at the booth for volunteer opportunities to bring science to communities around San Diego county.

Facility Walk-thru/Tour: N/A

Teacher Resources: Yes

UCSD National Society of Black Engineers (NSBE)

National Society of Black Engineers (NSBE), founded in 1975, is the premier non-profit organization worldwide that supports and promotes the aspirations of Black collegiate and pre-collegiate students and technical professionals in engineering and technology. The mission of the National Society of Black Engineers is "to increase the number of culturally responsible Black Engineers who excel academically, succeed professionally and positively impact the community." This group consists of Engineering Undergraduate students at UCSD.

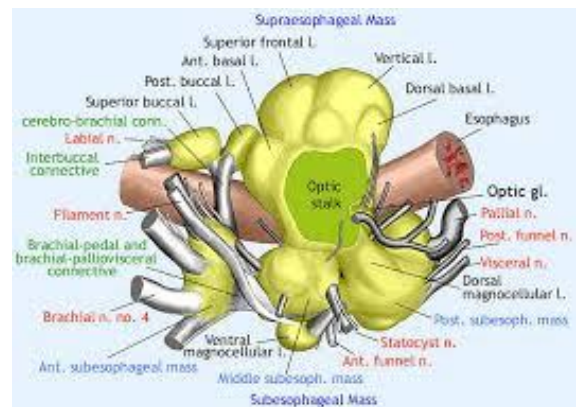
- What opportunities does NSBE offer its members?
- How does NSBE support Black students in STEM?
- What internship/ job opportunities have members gained through the UCSD NSBE chapter?

Volunteer/ Internship Opportunities: We offer opportunities for members once they are a member of NSBE (as early as freshman year). As a national organization, NSBE connects you to many companies which can offer internship opportunities.

Facility Walk-thru/Tour: Yes
Teacher Resources: No

UCSD Neuroscience Outreach

Their mission is to teach the community about fundamental principles in neuroscience and inspire students to explore scientific fields as they develop their educational and professional goals. They have scientists that study the small molecules that are found in brain cells all the way to scientists that examine how multiple areas of the brain are involved in complex behaviors and diseases. At this booth they will have a range of different fun neuroscience demonstrations! There will be opportunities to look at different brains from multiple animal species (including an octopus!), and the chance to hold a sheep brain. They will also have modules featuring a "dancing cockroach" and a robotic claw that demonstrate how the nervous system uses electrical signals to communicate with itself.



- What is neuroscience?
- What kinds of careers exist in this field?
- What got you interested in brains?



UCSD Project in a Box

Project in a Box is a student-led organization at the UC San Diego Jacobs School of Engineering that originated in 2016 with a mission to make experiential learning more accessible to undergraduate students on campus. An Electrical and Computer Engineering (ECE) Department program at UC San Diego designed to motivate and empower undergraduate students has found a creative way to challenge young people to think outside the box by first asking them to dive into one.

- What are some of the ways you get involved with the community?
- What are the major differences between Electrical and Computer engineering?
- What are some of the projects your group does?

We hope you have a great time at the fair!