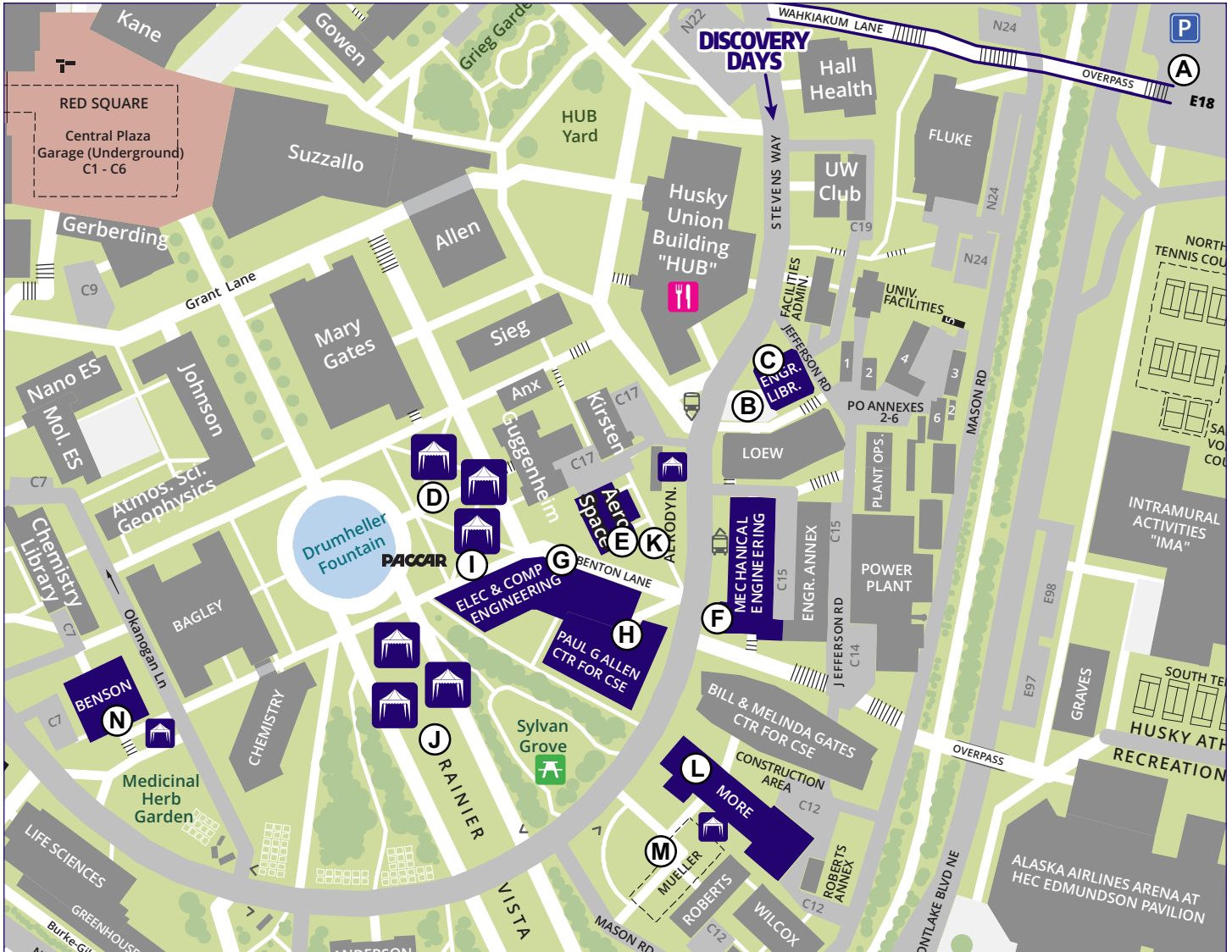


W ENGINEERING DISCOVERY DAYS

2024 EVENT MAP & PROGRAM



- Key:**
- Exhibit Tents
 - Exhibit Buildings
 - PACCAR** Sponsor Exhibit
 - Picnic Area
 - Food Option
 - Parking
 - (A)** E18 Welcome Tent
 - (B)** Loew Hall Welcome Tent (Information, Lost Children, Non-emergency Medical)
 - (C)** Engineering Library
 - (D)** Guggenheim Lawn Tents
 - (E)** Aerospace & Engineering Research Building
 - (F)** Mechanical Engineering Building
 - (G)** Electrical & Computer Engineering Building
 - (H)** Computer Science & Engineering Building
 - (I)** Benton Lane
 - (J)** Rainier Vista Tents
 - (K)** AERB Lawn Tents
 - (L)** More Hall
 - (M)** Mueller Hall and Mueller Courtyard
 - (N)** Benson Hall

Thank you to our sponsors:



Aeronautics & Astronautics

Letter in circle represents location on map

- J Aerospace Vehicle Sensing and Mapping:** Learn how air, space and underwater vehicles determine their position and orientation relative to other vehicles and objects when GPS can't be used. Focus will be on use of vision, accelerometers and gyroscopes.
- E Autonomous Control Lab:** Come visit the lab and interact with hosting graduate students to learn about control systems. *AERB 418*
- J Controls and Trustworthy Robotics Lab: Humans and Robots Working Safely Together:** Learn how autonomous robots can work with, around and alongside humans in many ways, like delivering your food, checking your health or helping firefighters!
- E Flow Z-Pinch Lab - Can Crusher and Toroidal Z-Pinch:** A Z-pinch is a superheated, electrically conductive gas (plasma) that is pinched into a tight column. We will demonstrate how Z-pinch forces can crush a can and form the basics of a fusion reactor. *AERB 036*
- E Ram Accelerator Rocket Launcher:** Ram accelerator technology launches payloads into space! We will offer tours of ram apparatus and its applications. *AERB 012*
- J Robotics and Aerospace Information Networks (RAIN) Laboratory:** See how the research projects in the RAIN Laboratory explore autonomy and coordination for aerospace and robotic vehicles.
- J Rocketry with UW AISES:** Come launch rockets with us and learn about the fundamentals of rocketry! Talk to

- UW Indigenous engineers and learn about opportunities for joining our community and team here at the UW.
- J Space Grant:** Future astronauts: imagine packing for an adventure in space. What would you bring? What stays behind? Let's explore together!
- E SPACE Lab Tour:** The Space Propulsion and Advanced Concepts Engineering (SPACE) Lab invites you to tour our facilities. In our lab we use vacuum chambers to recreate the conditions in space to research and develop technologies at the forefront of space exploration. *AERB 013*
- J Water Rockets with UW Society for Advanced Rocket Propulsion:** Come launch 2-liter water rockets, take photos with hard hats and other safety equipment, and sign your name on a rocket livery.

Bioengineering

All exhibits will be on Rainier Vista **J**

Channel Your Inner Bioengineer: We have an exhibit full of bioengineering related hands-on activities. From DNA extraction to microfluidics, stop by to practice your bioengineering skills!

Coloring Outside the Lines: Bioengineering and Design: Learn how our unique life experiences can help us find and solve health problems.

DNA Detectives: Mutations, Proteins and Drug Treatment: Many drugs work by disrupting proteins

involved in disease. Learn how mutations in DNA can change proteins to make drugs ineffective, and how we can detect those changes to choose the right drugs.

Engineering in Health with the Biomedical Engineering Society: Come chat with BMES about the many ways engineering can be used to improve health, and explore some of the exciting innovations in medicine and engineering through hands-on activities.

Mucus and Poop: The Dynamic Duo: Race with your friends to discover how mucus helps your digestive system move poop through your intestines!

Computing Tools to Better Understand Heart Disease: Computing tools can help health care experts understand heart disease. Visit our booth for hands-on technology demos showing how we used these tools.

Chemical Engineering

All exhibits will be at Benson Hall **N**

Brains, Engineers and Medicine, Oh My!: Learn how engineers can work in neuroscience and develop medicine! You'll also hear some cool fun facts about the brain and about cutting-edge research happening in Nance Lab.

Electrochemical Engin-earring: The Electrochemical Society will demonstrate how to use electrochemistry to turn dull titanium metal into colorful earrings you can take home. You'll also explore a variety of clean energy topics..

Exploring Conductive Inks: Dive into the exciting world of organic electronics, where polymers and small molecules conduct electricity.

Hydrogen, from Water!: Solar power is cheaper than ever, but the sun doesn't always shine. We will demonstrate

how excess electricity captured during the day can convert water to hydrogen, with a BANG!

Instant Snow from Super-Absorbent Polymers: Super-absorbent polymers can retain an extremely large amount of liquid relative to their own mass. In this hands-on exhibit, see how you can use these materials to create synthetic snow!

Microscopic Marvels & Pioneering Minds: Discover the unseen wonders of the microscopic world and celebrate the groundbreaking achievements of Black scientists in our trivia game!

Rob-Ross: Discovering New Mixtures through Happy Little Accidents: Robots are changing how

science is done in the laboratory. We show how a robotic scientist can learn to make new mixtures by running its own experiments and learning from the outcomes.

"Super Cool" Fun with Liquid Nitrogen: See how liquid nitrogen works by shrinking balloons and freezing flowers!

Unpoppable Bubbles: Create bubbles you can hold in your hand! Learn about the wonders of chemistry and surface tension.

Walk on Water!: Come "walk on water" and explore the mysteries of non-Newtonian fluid behavior.

Civil & Environmental Engineering

- J Bite-size Bridge:** Build a mini bridge using fun, edible materials with the Steel Bridge Team at UW. Put your engineering knowledge to the test!
- J Bridge Building with Engineers in Action:** Stop by our booth and explore the world of bridge-building. Grab a construction kit, put your engineering skills to work, and test your bridge to win some awesome prizes!
- K Concrete Canoe: Can Concrete Float?:** Find out how the UW Concrete Canoe Team designs floating concrete! Learn how we create a race-ready canoe made almost entirely of concrete.
- J Creating 3D Models Using Drones and Smartphones:** Learn how engineers use satellites and drones to make 3D models of our changing planet. Create your own digital 3D models using smartphone cameras and see real-time data streams from mapping drones with 3D lidar and thermal sensors.
- J Detecting Natural Hazards and Measuring Damage:** See how laser scanners, drones and seismometers are used to measure damage after hurricanes and earthquakes. Try to cause a measurable earthquake yourself! Provided by the RAPID Facility.
- J Earthquake Engineers: Exploring Earth's Forces and Materials:** Ever wonder how buildings stand tall during earthquakes? Join us for a thrilling journey where you'll shake structures, peek at groundbreaking materials under a microscope, and learn how walls can protect us.
- J Engineers Without Borders:** Explore how engineering students are impacting international communities through sustainable projects.
- J From A to B with ITE:** How did you travel here today? Learn how transportation professionals design and plan networks to move people and goods, and see if you can solve a common transportation problem.
- J GMO Houseplants That Really Clean Toxins Out of Your Home Air:** Despite what ads say, normal plants don't really clean the air of our homes, which can be full of damaging chemicals. See the genetically modified houseplants that we developed - they are proven to destroy carcinogens. Coming soon to the U.S.!
- J Let's Make Waves: Understanding Wave Motion in our Oceans:** Have you ever wondered how waves in our ocean work and how to measure them? Visit our demonstration to learn how we use physics and engineering to understand waves in our oceans.
- K Lock-Exchange Experiment:** Investigate the interactions between fresh and saltwater using a small tank, salt and food coloring.
- J Measuring Snow in the Mountains:** Measuring mountain snow can inform water resource planning and research into climate patterns. At this exhibit, you can measure two important snow properties: temperature and snow water equivalent.

Civil & Environmental Engineering (continued)

- Ⓜ Pacific Northwest Transportation Consortium:** Explore the future of transportation. Immerse yourself in innovative technologies and interactive displays that showcase advancements in the industry and highlight the critical role transportation plays in shaping our world.
- Ⓜ Shop n' Bike:** Learn how the Seattle Rentable Grocery Bike Program can help individuals shop for groceries and then transport them back to their homes in a convenient and eco-friendly way.

- Ⓜ Zoom into the Future: AI Adventures in Transportation:** Explore the world of modern transportation and experience firsthand how advancements in AI will create safer travel for all of us. *More Hall 101*

Computer Science & Engineering

All exhibits will be in the CSE Atrium **(H)**

- Binary Encoding:** Encode your own secret message using binary code! To assist with the translation, a binary key will be provided.
- Circuit Playground:** Play games using a circuit board!
- DNA as Computers:** Every organism runs its own DNA program. At the Molecular Information Systems Lab (MISL) we create our own programs with DNA. Learn how DNA is being used to store information and build computers that interface with the biological world.

- PLSE Dragon Curves!:** Learn about programming languages and graphics research by constructing dragon curves out of paper with our help.
- Synaptech Showcase:** Explore Opticars, an Arduino car controlled with eye movements. We will also demonstrate our app, Painting with Brainwaves, which converts neural recordings (eeg) to artwork.
- Ubicomp Lab:** The Ubiquitous Computing Lab develops innovative sensing systems for real world applications in health, sustainability and novel interactions. Design and build

- your own sensing and AI system for detecting different kinds of objects and movements.
- UW Reality Lab:** See demonstrations of current virtual reality research by students in the UW Reality Lab. Learn how VR is being used in research around the UW, from geology to medical diagnostics.
- Would You Rather: Security and Privacy Edition:** When we design new technology, how do we balance cool features against creepy or unsafe ones? Discover how your choices compare to others!

Electrical & Computer Engineering

- Ⓜ Advanced Robotics: Battle of the Bots:** Pilot ARUW's robots and see how we use 3D printing and composites to build robots for the RoboMaster competition.
- Ⓜ Fashioning Jewelry from Electronic Waste:** In this workshop, we'll repurpose electronic waste into custom designed, homemade earrings. *Tickets required – pick up at the ECE Welcome Table in the CSE building, room AE100.*
- Ⓜ Human/Machine Interaction:** Using measurements of the electrical signals that drive your muscles, you will control a robotic gripper as an extension of your arm.
- Ⓜ Neural Network Pictionary: Can AI Recognize Your Doodles?:** Can a computer recognize your art? Stop by to show off your drawing skills and learn more about how computers can "see" your art.
- Ⓜ Remote Hub Lab Club - Arduino Robotics:** Learn programming skills and electrical engineering fundamentals by exploring how to program a miniature robot with an Arduino.
- Ⓜ Robotics Education:** Explore the future of robotics education! Engage with interactive demonstrations

- designed to inspire and educate students about the exciting world of robotics, fostering a passion for engineering and innovation.
- Ⓜ The Glowing Pickle:** What happens to an ordinary pickle when it is plugged into an ordinary wall outlet? Don't try it at home, but we invite you to watch what happens when we try it. *Tickets required – pick up at the ECE Welcome Table in the CSE building, room AE100.*

Human Centered Design & Engineering

All exhibits will be on Guggenheim Lawn **(D)**

- Beat Pacers:** Got the moves to bop with the groove? Follow the beat, get a high score and you'll get a treat!
- Build a Chair for Mr. Bear:** Help design a chair for the many different forms of Mr. Bear! Learn to prototype with Duplo Legos, playdough, and a few members of the HCDE department.
- Design Detectives:** Put on your thinking cap and get creative. Crank the dial, get a surprise prompt, and build something awesome! Show off your work in our Hall of Fame, next to other amazing creations.
- Interactive Map Visualizations of Washington State:** Come play with physical visualizations of Washington state environmental data.
- Makey Music:** Do you love music? Strike a chord and learn about the design process by building your own musical instrument and composing your own song.

- Puzzle Playland:** Test your problem-solving skills at the Puzzle Playland booth with puzzles designed to spark your curiosity and stretch your reasoning abilities.
- Sculpt2Game:** Unleash your creativity and apply human-centered design principles in this collaborative design challenge! Use Play-Doh and other crafting materials to make a controller and compete in a video game.

Industrial & Systems Engineering

All exhibits will be on Guggenheim Lawn **(D)**

- Block Builder Bonanza:** How fast can you build a Lego design? Learn about the learning curve by racing against your friends and yourself.
- Compete to Build a Project!:** Using cards representing steps, cost and time in the manufacturing process, choose and rearrange the cards to create a production line and compete for the lowest time and cost.
- How Sweet it Is:** Learn about probability and statistics with M&Ms.
- Husky Doodle Drill: From Chaos to Clarity:** Do you know how to draw a husky? Can you draw the exact same husky as someone else? Test your drawing skills and learn about the importance of standard work operations.

- Typing Challenge: Phones vs. Keyboards!:** Compare your typing speed on a phone/tablet against typing on a more ergonomically designed keyboard to see how different designs affect performance.
- Word Color:** Say the color of the listed words and see how different designs affect human performance.

Materials Science & Engineering

All exhibits will be in Mueller Hall or Courtyard **(M)**

- Composite Materials:** Can a material be lightweight and super strong at the same time? Come learn about composite materials.
- Energy Materials:** Learn what new materials are being developed for solar energy and energy storage at UW.
- Extreme Materials for Extreme Temperatures:** Can a thin piece of material be exposed to a 2000F flame on one side and still feel cold on the other? How do materials behave at extreme cold temperatures? Come find out!
- Let's Break Something:** Using our powerful load frame, learn how strong engineering materials are and how they break. Some materials may surprise you! *Mueller Hall 165*
- Make Your Own Silly Putty:** Come make your own silly putty and learn about the wonderful world of materials and the crazy things they can do.
- Materials of Music:** Ever wonder what materials are used for different musical instruments? Come learn about the material science of making music.

- Nanomaterials in Medicine:** When materials shrink to nanometer scale, they exhibit a unique set of properties. Learn about how nanomaterials are being used to save lives. *Mueller Hall Lobby*
- Scanning Electron Microscopy:** See things magnified 50000 times and explore how engineers solve materials problems using powerful electron microscopes. *Mueller Hall 167*

Superconductors: Are there materials that have zero electrical resistance? Find out the superpowers of superconductors!

Welcome Booth: Learn about materials science and make your own glow in the dark bracelet.

Mechanical Engineering

- (K) **Accessible E-Bikes:** We partner with Outdoors for All to retrofit their existing fleet of handcycles with electric motors, providing riders with disabilities more freedom and range.
- (K) **Autonomous Insect Robotics Lab:** Learn about the design principles we use to make insect robots.
- (K) **Billions of Bubbles to Make Plastics Bigger?:** Plastic specimens are saturated with carbon dioxide under high pressure. Through rapid heating, we can induce millions of bubbles in the plastic to expand its volume and reduce density.
- (F) **Biomechanics Assemble! From Exoskeletons to Cytoskeletons:** Biomechanics uses engineering tools to improve health and well-being. Come learn how we study movement and forces in humans and cells. *MEB 127*
- (K) **Egg Drop:** Keep an egg safe during a fall from a ladder! Choose the best materials and method to keep the egg from cracking on impact.
- (D) **E-Truck:** Learn about our E-Truck project, build a small truck that runs, and jump into a real truck brought on campus from our PACCAR sponsors!
- (K) **Food Ashby Plot:** Test various food items and use an impact tester to determine their strength, as well as create an Ashby Plot comparing different food groups.
- (K) **Human Powered Submarine:** Join us to play a buoyancy game!
- (F) **HuskyADAPT: Switch-adapted Toys & Spin-art:** HuskyADAPT is a student group focused on accessible design and play technology. Try out our switch-adapted toys and create your own spin art! *MEB 127*
- (F) **Measuring Underwater Noise at Wave Energy Sites:** The Marine Renewable Energy Laboratory uses sensors to measure underwater noise close to wave energy generators. Join us for a hands-on activity to prototype packages of sensors in waves, explore how sound is visualized. *MEB GO21*
- (F) **Multi-Robotic Systems in Aerospace Manufacturing:** Come see a demonstration of a multi-robotic system for the future of manufacturing components for airplanes. *MEB GO31*
- (F) **Robotic Ultrasonic Inspection:** Join us to see a demonstration of how we use a robotic arm and ultrasound to make sure airplane parts are safe. *MEB GO31*
- (K) **UW Formula Motorsports:** See our formula-style race car, which is designed and built by UW students! Take Polaroids next to the car and get a chance to drive a racing simulator.
- (K) **Washington Superbike:** Washington Superbike is an engineering team that designs, builds and races a custom electric motorcycle. Visit our exhibit to learn more about engineering, motorcycles and our electric future!

Molecular Engineering

All exhibits will be on AERB Lawn (K)

A Magnetic Moment with MEM-C: Learn about permanent magnets and electromagnets! Electromagnets are key in modern industries and their strengths can be controlled by varying the electric current that flows through them.

Strawberry DNA Extractions: So you've heard of DNA, but have you seen it? Have fun mashing up strawberries and extracting visible blobs of DNA while learning about DNA and what scientists do with it.

What is Molecular Engineering?: We will be exploring the wide range of science that falls under Molecular Engineering to discover how thinking small can lead to big impact!

Student Groups

- (K) **Build Sailboats and Learn Engineering Design:** The Society of Women Engineers is dedicated to encouraging girls to pursue careers in STEM. Join our High School Outreach team to build sailboats and test their ability to float while learning about the engineering interactive design process, platform, and engage in hands-on experimentation with various sensors that change based on code you write.
- (J) **DIY Ice Cream:** Learn to make your own ice cream!
- (I) **Husky Flying Club Drone Expo:** Watch drones fly in VR with the Husky Flying Club!
- (K) **Husky Robotics Mock Mars Rover:** Ignite your curiosity about space exploration! Visit our Mars rover showcase and see advanced technologies for exploring simulated alien landscapes.
- (K) **Invisible Ink Experiment:** The Society of Women Engineers will teach you how to use chemical properties to make invisible ink and then make the text appear.
- (K) **The Power of a Microwave:** How do microwaves heat up our food? We will use marshmallows to explore how microwaves really work!

Other

- (J) **Build with Engineering Ambassadors:** Design, build, test, repeat! Get your hands on the engineering design process with some help from Engineering Ambassadors.
- (J) **Coding and Sensor Explorations with Arduino:** Discover Arduino, an introductory-level electronics.
- (D) **Design Build Fly:** Explore our projects where we build systems critical to the design and fabrication of an aircraft.
- (K) **DubsTech: Empowering Students in Tech:** Come visit the UW iSchool to learn how we are empowering UW students and local high school students in tech careers and tech education.
- (J) **Exploration of 3D Printing Methods:** Learn about two methods for 3D printing by extruding inks to create 3D shapes and objects, and examine how the processes can change the materials by comparing the photocuring of resins.
- (D) **Huskies' Precious Plastics:** Turn discarded plastic into useful items, fostering a culture of informed recycling. Learn about the different types of plastics, how to create molds through 3D printing and CNC machining, and how to use and maintain plastic recycling equipment.
- (J) **IMOD Quantum Dots:** See how quantum dots can help plants grow while exploring the energy of light itself in hands-on activities
- (K) **Jump & Adventure:** Experience an interactive obstacle-avoid game built with P5.js and Arduino.
- (C) **Kids Invent! Imagine Yourself as an Engineer!:** Learn how engineers invent, design, and create solutions that make a difference in the world. We highlight youth inventors throughout history and display a collection of books celebrating the achievements of young inventors.
- (J) **Light Bulb Showdown: Watt Will You Choose?:** Enter the 'Light Bulb Showdown' to find the ultimate energy-efficient champion! Also visit the Clean Energy Institute to unleash your creativity by drawing circuits and connecting with solar cells for a hands-on experience.
- (J) **Making Recycled Paper:** The Bioresource Science & Engineering department will demonstrate how paper can be recycled and turned back into paper. Make your own paper from waste at this hands-on exhibit.
- (G) **Washington Nanofabrication Facility:** Get an introduction to nanofabrication and nanotechnology with hands-on activities and demos. *ECE 2nd Floor Auxiliary Atrium.*
- (H) **Science is Accessible to All:** The DO-IT Program will show how anyone can become a scientist, regardless of ability. Learn about assistive technology and experiences of people with disabilities in STEM.
- (H) **Sensory Room:** Do any of your students need a break? This space is a quiet low sensory room for participants who need to take a break from all the excitement. *CSE 203*