EXHIBITS SORTED BY DEPARTMENT

AERONAUTICS & ASTRONAUTICS

Computational Plasma Physics Group - live demos of what goes into developing a model, implementation of a computational framework, & how our research relates to the fields of plasma physics and fusion science.

Continuous Rotating Detonation Engine - a new combustor for jet engines developed, uses rotating detonation waves in an annular combustor. This technology will increase fuel efficiency of commercial gas turbines.

Design, Build, Fly - student-led club that builds a new aircraft every year to compete in an international competition. Friday only.

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Drones and Unmanned Aerial Systems - examine & interact with Unmanned Aerial Systems (AKA drones) including simulation, hardware, and flight simulators. Friday only.

The HIT-SI3 Experiment - a magnetic confinement fusion energy experiment.

Hybrid Rocket - pop-bottle rocket hands-on activity with display on rocket physics.

Mars Rover by Husky Robotics - designed to drive rugged terrain, collect & analyze soil samples, & assist astronauts in various tasks.

Ram Accelerator Hypervelocity Launcher - two ram accelerators on display. These devices can launch large vehicles into space.

Robotic Fish - learn the design and control of robotic fish, this exhibit demonstrates autonomous operation of a fish robot.

Water Bottle Rockets - learn the basics of rocketry. Design, build, & launch a water bottle rocket!

ZaP Flow Z-Pinch - a plasma physics experiment that investigates using flows to stabilize an otherwise unstable configuration. Tour includes a brief explanation of the machine, the diagnostics used to measure it, and examples of plasmas in our everyday lives.

BIOENGINEERING

All exhibits will be on Rainier Vista ③ on Friday, April 24 & Foege Hall ③ on Saturday, April 25.

Alginate Nanoparticles - form your own “nanoparticles” & learn about nanomedicine!

Bioengineering Academic Programs - academic counselors on hand to answer questions about the department & BioE educational programs. Saturday only.

Build A Prosthetic - build a model & learn about the factors that bioengineers consider when designing prosthetics.

Crime Scene Investigation - a famous synthetic biologist has been murdered, & the investigation team needs your help to find the culprit! Come help us solve the mystery while learning about DNA, synthetic biology, & other bioengineering topics.

Lab in a Phone Call - interact with Lutz Lab setups to explore the relationship between fluid properties and resonance.

Pumping the Heart - hands-on pump-and-tube model demonstrating the work required by the heart with healthy or diseased blood vessels. Friday only.

Rebuilding the Heart - see how scientists are developing ways to keep the heart beating for a lifetime.

Simulate body and metabolism - using interactive, real-time diabetes simulator, computationally predict how virtual patient responds to external factors.

Strawberry DNA Extraction - remove the DNA from strawberries!

Vascular Engineering & Regenerative Medicine - display vessel plastics, and beautiful architectures of vessel trees. Friday only.
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<tr>
<th><strong>CHEMICAL ENGINEERING</strong></th>
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<th><strong>CIVIL &amp; ENVIRONMENTAL ENGINEERING</strong></th>
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<tr>
<td><strong>All exhibits will be at Benson Hall</strong></td>
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<td><strong>Beyond Red Light, Green Light</strong> - how modern technology is improving transportation planning. <strong>Friday only.</strong></td>
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<td><strong>Biodiesel Cooperative</strong> - learn what biodiesel is &amp; how we convert waste food oil to biodiesel.</td>
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<td><strong>Drinking water disinfection by chlorine</strong> - hands-on activity of chlorine measurement in drinking water &amp; general bacteria culturing on purple plate. <strong>Friday only.</strong></td>
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<td><strong>Cooler Than Ice</strong> - Come check out the science of cold at the dry ice exhibit!</td>
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<td><strong>Engineering Plants To Fight Pollution</strong> - poster with live plants.</td>
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<td><strong>Electrochemical oxidation of titanium</strong> - grows thin transparent films that display different colors depending on film thickness, creating unique titanium jewelry.</td>
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<td><strong>Liquefaction</strong> - demonstration of soil liquefaction using a plexiglass cylinder filled with wet sand. Model houses placed on top of sand sink into liquefied sand as it's shaken. <strong>Friday only.</strong></td>
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<td><strong>Making Molecules from Bugs</strong> - genetic engineering lets us manipulate DNA in harmless microorganisms to safely produce renewable materials. Learn how to do your own DNA experiment at home!</td>
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<td><strong>The Lock Exchange Experiment</strong> - conduct experiments in mini gravity wave tanks, using salt to change density. Handheld thermal infrared camera investigate how temperature affects density driven flows. <strong>Friday only.</strong></td>
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<td><strong>Microbes are Everywhere</strong> - discover how scientists explore the diversity of bacteria &amp; harness these bugs to make useful things. See how many of bacteria are on your hands! <strong>Friday only.</strong></td>
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<td><strong>Shake Table Exhibit</strong> - build a model &amp; see if it can withstand simulated earthquakes.</td>
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<td><strong>Walk on Water</strong> - walk on top of water while learning about shear thickening fluids!</td>
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<td><strong>UW Concrete Canoe</strong> - student club designs &amp; builds a canoe made of lightweight concrete and race our final product in competition. <strong>Saturday only.</strong></td>
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<td><strong>Water Splitting</strong> - two parts hydrogen + one part oxygen, come split water apart &amp; learn about ways to make fuels from electricity!</td>
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<td><strong>UW Steel Bridge</strong> - learn the basics of steel as a building material &amp; make miniature structures for testing. <strong>Saturday only.</strong></td>
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<td><strong>Hummingbird Mobility Aid System</strong> - see user-centered design in action! The Hummingbird Mobility Aid System is a multimodal sensor attachment for a standard white cane that allows vision impaired users to detect &amp; avoid raised obstacles through haptic feedback.</td>
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<td><strong>Watershed Dynamics</strong> - model of watershed with demo of precipitation &amp; streamflow.</td>
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<td><strong>Magik Kolor</strong> - use an electronic interactive paint-by-numbers system to create your own art!</td>
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<td><strong>Smartwatch App Design</strong> - come learn &amp; try quick design &amp; prototyping techniques for smartwatch &amp; mobile device applications!</td>
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**COMPUTER SCIENCE & ENGINEERING**

| **All exhibits will be in the CSE Atrium** | | **DO-IT’s AccessSTEM & AccessComputing** - promotes inclusion of people with disabilities in challenging academic programs & careers. |
| **Center for Game Science** - games that identify optimal learning pathways for STEM. | | **Paul G. Allen Center CSE Student Tour** - learn what makes this world-class facility for computing education unique. Tours run every 1/2 hour from 10 am - 1:30 pm. **Saturday only.** |
| **DawgBytes** - an intro to the exciting world of computer science & engineering. | | **UbiComp Lab** - see how sensors can make your life easier and better. **Saturday only.** |
| **Glassketball** - studying the use of technology in athletics. **Saturday only.** | | **Wireless Power & Personal Robotics** - how battery-free electronics use wireless power & ambient energy to sustain themselves & how personal robots use the latest technology to interact with humans and their environment. |
| **The Glowing Pickle** - What happens to the ordinary pickle when you plug it in to an equally ordinary wall outlet? Don't try it at home... but we invite you to watch what happens when we try it. **Tickets required & may be picked up at the Electrical Engineering Welcome Table, located in the CSE Building** | | **High Voltage! Historical Electrical Apparatus** - A selection of recreated high voltage equipment from the electrical engineering past will be demonstrated. |
| **NutriRay3D** - cellphone laser attachment to detect the volume of objects. **Friday only.** | | **Sit-Smart** - chair that measures posture. The posture can be used to play a game. |
| **Yeast balloons** - learn how to blow up a balloon using yeast and sugar! **Friday only.** | | **Walk on Water** - walk on top of water while learning about shear thickening fluids! |

**ELECTRICAL ENGINEERING**

| **Arm Kommander** - Context-sensitive, wearable smart watch "Pip-Boy." **Friday only.** | | **High Voltage! Historical Electrical Apparatus** - A selection of recreated high voltage equipment from the electrical engineering past will be demonstrated. |
| **The Dark Side of Consumer Electronics** - learn how to make a positive difference in the growing electronic waste stream. | | **NutriRay3D** - cellphone laser attachment to detect the volume of objects. **Friday only.** |
| **Fashioning Electronic Waste into Jewelry** - repurpose electronic waste into earrings. **Tickets required & may be picked up at the Electrical Engineering Welcome Table, located in the CSE Building** | | **Sit-Smart** - chair that measures posture. The posture can be used to play a game. |
| | | **Yeast balloons** - learn how to blow up a balloon using yeast and sugar! **Friday only.** |

**HUMAN CENTERED DESIGN & ENGINEERING**

| **All exhibits will be at Drumheller Fountain** | | **Hummingbird Mobility Aid System** - see user-centered design in action! The Hummingbird Mobility Aid System is a multimodal sensor attachment for a standard white cane that allows vision impaired users to detect & avoid raised obstacles through haptic feedback. |
| | | **Magik Kolor** - use an electronic interactive paint-by-numbers system to create your own art! |
| | | **Smartwatch App Design** - come learn & try quick design & prototyping techniques for smartwatch & mobile device applications! |

**THANKS TO OUR SPONSORS:**

![Boeing Logo]
**INDUSTRIAL & SYSTEMS ENGINEERING**

*All exhibits will be on Rainier Vista on Friday, April 24 only.*

**Accuracy Vs. Precision** - learn about basic concepts of experimental measurement error through playing a game.

**Getting Lean: Industrial Engineering Methodology** - learn about efficient manufacturing in our model airplane building workshop.

**How Sweet It Is** - learn about probability and statistics with M&Ms. How many red ones are in your sample?

**The Learning Curve Maze Challenge** - explore the concepts of the learning curve by completing a human-sized maze at high speed that will demonstrate how your performance improves with experience.

**MATERIALS SCIENCE & ENGINEERING**

**Advanced Composites** - comparison of materials & how advanced composites offer advantages in industry.

**Functional Materials** - learn about Piezo-Electronics.

**Hot & Cold: How Materials Behave in Extreme Conditions** - see the effects of very hot & very cold from space shuttle tiles to racquet balls to marshmallows.

**How a Fuel Cell Works** - see how hydrogen & oxygen are separated in water.

**Magnetic Nanoparticles for Cancer Treatment** - see how nanoparticles are made & learn how they are used to treat diseases!

**Materials for Solar Energy** - learn about ways materials are used to convert the sun’s energy to usable energy here on earth.

**The Materials of Music** - learn about the wide variety of materials that are used to make musical instruments.

**Nano Materials** - examine behavior of nano materials under a microscope & get a picture.

**Optical Properties of Materials** - play with jello & lasers!

**The Little Cell That Could Tug** - cells are the basic building blocks of our body, but part of their job is to crawl, pull & tug. Learn how strong cells are & how we measure their nanoscale forces with cantilevers. *Friday only.*

**Mechanical Testing** - sometimes we just have to break things! See how engineers test materials and structures to make sure that the things we build are safe.

**The Ultimate Machine: Human Ability & Engineering** - the human body is the ultimate machine. Come explore how the body works & how new technology and innovations are improving human performance. *Friday only.*

**UW EcoCAR 3** - visit the EcoCAR 3 lab to see where a team of UW students design & build a hybrid electric vehicle. *Saturday only.*

**UW Formula Motorsports** - every year we design, build, test & race an electric & combustion car in US & international competitions.

**Vibrations Big & Small** - vibrations affect everything around us, from airplanes & rockets, to bugs & even our ears. See how we study the way both big & small things move.

**3D Printing at UW** - demonstration of 3D printing small & large objects.

**OTHER**

**A Century of Invention: Engineering in Washington State since 1915** - innovation builds upon the past work of engineers & scientists. Learn about some of the major milestones in engineering history in Seattle at the Engineering Library!

**Explore Nanoscience and Molecular Engineering** - discover the amazing world of nanoparticles! Play with nanometer-thick films. Cover coins in gold using plasma.

**Solar Car Derby** - clean energy ambassadors will help students build solar cars with a variety of cells & then race them. Learn about clean energy research at UW.

**Engineers Without Borders** - learn about our projects in Guatemala & with other local organizations.

**The Wide World of Sound** - demos of underwater sound, speech & ultrasound.