WELCOME

UNIVERSITY of WASHINGTON
College of Engineering
2010 DISCOVERY DAYS

Change the world.
Be an engineer.

The UW College of Engineering is more than just a national leader in educating engineers for the 21st century. We're a diverse community of innovators, passionate about collaboration, teaching, and learning – a community dedicated to mentoring the next generation of researchers, entrepreneurs, corporate, and civic leaders.

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Following is a Program of Exhibits and attractions that form this year's Discovery Days. This list is not exhaustive, and visitors are encouraged to tour all facilities participating in Discovery Days. The enclosed map on the back of this program is a guide to the various exhibits. The number listed next to each exhibit corresponds with the number on the enclosed map.

Aeronautics and Astronautics

The Helicity Injected Torus Experiment .....*AERB 401* (6)
The Helicity Injected Torus Experiment is a fusion energy research project, studying steady-state current drive in innovative geometries.

Spacecraft Formation Flying .....*Guggenheim 315* (16)
The exhibit is on distributed spacecraft formation flying and some of the underlying control engineering.

Flow Visualization of a Wing Tip Vortex.....*Guggenheim 104* (16)
This Exhibition demonstrates the flow visualization of the wing tip vortices seen about the ends of wings, which airplanes generate during takeoff and landing.

Lightning Strike .....Guggenheim 105 (16)
Simulated lightning bolts strike composite aircraft structures. *FRIDAY ONLY.*

Control of Robotic Fish.....*AERB Lawn* (6)
This activity will demonstrate the components of operation of autonomous fish robots in an outdoor pool.

Autonomous Flight Systems Laboratory .....*AERB 117* (6)
In addition to movies, posters, and discussion, participants will fly custom made flight simulators.

Aeronautics and Astronautics Senior Space Design: Asteroid Mitigation.....*Guggenheim 2nd Floor* (16)
AA421 Senior Space Design Project

Design-Build-Fly .....*Kirsten Wind Tunnel Building* (5)
A team of undergraduate students competing in an international R/C aircraft design competition.

Zap Flow Z-Pinch Plasma Experiment.....*AERB 036* (6)
Zap is a basic plasma physics experiment that studies the effect of sheared flows on gross plasma stability.

AA Information Booth .....*Guggenheim* (16)
An information booth for questions concerning the AA dept., the College of Engineering, Discovery Days, directions & also AA t-shirt sales.

Ram Accelerator Direct Space Launcher .....*AERB 026* (6)
Ram accelerator prototype on display showing the fastest ramjet engine in the world! *20 minute tours every half hour*

Kirsten Wind Tunnel.....*Kirsten Wind Tunnel Building* (5)
Low Speed Wind Tunnel.
Open Friday and Saturday, but only running during certain periods.

Bioengineering

On Friday, all BioE exhibits will be on HUB Lawn (2). On Saturday, all BioE exhibits will be in Foege North (17).

Guy Simplant (Biomaterials in the Body)
Where do artificial and other implants go in a human body?

Youth Take Heart
Explore the physiology of the cardiovascular system, related diseases, and bioengineering solutions for heart disease.

Fingers Engineering
Design and construct artificial fingers of your own.

Bioengineering Education
Overview of programs offered by Department of Bioengineering. *SATURDAY ONLY.*

Label-free Biosensing with Sugar
See carbohydrate by atomic force microscopy and learn how carbohydrate molecules play role in biosensing applications.

Cell Biology on a Chip
Explore a variety of microfluidic devices and learn about cell biology problems with this technology.

Bioengineering Student Projects
What Bioengineering students have invented during their time in Bioengineering classes and capstone projects.

Engineering Proteins to Fight Diseases
Investigate proteins misfolding (causes of many diseases) by computer simulation and designs of small proteins to stop the disease progression.

Nanotechnology and the Random Factor
An interactive game to help understand how random movements of tiny objects can both cause and solve problems in nanotechnology as well as display how this is used in bio-nanotechnology research.

Synthetic Biology
Examples of wet-lab and dry-lab research from the field; for example a simple computer simulation and interactive tutorial showing how modeling and experiments come together in synthetic biology as well as fluorescent cells.

Nanotechnology and Quantum Dots
Explore different structures on the nanometer scale used in designing functional materials for medical applications such as multicolor quantum dots (Qdots) for fluorescence imaging and multifunctional polymeric nanoparticles for targeted drug delivery.

Microfluidics and Global Health Diagnostics
Developing rapid, easy to use and low-cost diagnostics: bringing laboratory-quality assays to low-resource settings.

Bioengineering Without Borders - BWB
See what ways undergraduate students can contribute to global health.

Bioengineering Outreach
Undergraduate students show you what you can see with an ultrasound machine.

Chemical Engineering

Introduction to Chemical Engineering .....*HUB Lawn* (2)
Find out more about the Chemical Engineering profession from faculty and students.

Walk on Water.....*HUB Lawn* (2)
You probably know the difference between solids and liquids. But did you know some materials are both?

Silly Putty .....*HUB Lawn* (2)
Polymers and Plastics are everywhere. Learn more about them, and take a crack at making your own silly putty.

Engin-earrings.....*HUB Lawn* (2)
Learn more abut electrochemistry - and see how it can be used to make colorful "anodized" titanium jewelry (that you can take home with you).

Civil and Environmental Engineering

Radar Gun Race.....*Sylvan Grove* (12)
Measure speed of runners using radar guns. Participants run side by side along set path with start/finish lines, approximately 40 feet. *FRIDAY ONLY.*

Exploring Estuaries.....*More 220* **(13)**
Fluid mechanics experiments show how eddies generated by tides and currents generated by saltwater intrusion are important in estuaries. *FRIDAY ONLY.*

Riding the Earth Quake.....*More 038* (13)
Experience simulated earthquake ground motion by riding the shake table.

Climate and Water .....*More 220 (*13)
Learn the effect of snowmelt on the water supply in the summer months via simple hands-on experiments.

Traffic Hero.....*More 101* (13)
A two player variant of Guitar Hero/Rock Band games, using the highway as the fret board and the cars as the fret buttons, players count cars and compete to see who is the most accurate.

Transportation Jeopardy .....*More 219* (13)
Enjoy answering transportation questions in the format of the game show Jeopardy!

Video Vehicle Detection on Freeways .....*More 101* (13)
An exhibit demonstrating automatic detection of vehicles on freeways using computer vision techniques.

Loop Sensors.....*More 101* (13)
A board of simulated loop sensors and a signal cabinet and the ALEDA system demonstrates how the loop detectors can capture passage of vehicles. *FRIDAY ONLY.*

High Occupancy Lane VISSIM Simulation .....*More 221* (13)
VISSIM software demonstrates the computer simulation process of High Occupancy Toll (HOT) lane. *FRIDAY ONLY.*

DRIVE Net.....*More 225 (*13)
A Google-map based online system that can allow users to interact with transportation data easily and efficiently.

Traffic Signal Operation.....*More 101* (13)
Learn how traffic signals operate. See what's inside those mysterious gray cabinets.

Transportation Northwest Information Booth .....*HUB Lawn* (2)
Prospective students can learn about funding and support opportunities available through our Advanced Institute program. *SATURDAY ONLY.*

CEE Student Panel & Structural Lab Tour ..... ……*More 230*
Learn about civil & environmental engineering from current students! Optional tour to structural lab follows panel presentation. Panel begins at 10:30am. *SATURDAY ONLY*.

One Bus Away.....……*More 101* (13)
Demonstration of a transit traveler information system. *SATURDAY ONLY.*

Pedestrian and Bicycle Tracking .....……*More 101* (13)
Pedestrians and bicyclists are tracked in real-time using computer vision techniques.

Computer Science and Engineering

All exhibits in the Paul G. Allen Center for Computer Science and Engineering will be open 10:00am - 1:00 p.m. Friday and 10:00am - 2:00pm on Saturday.

Accessibility……..*Microsoft Atrium* (10)
Discover the innovative ways computer science is helping people who are blind, low-vision and deaf-blind connect to people and information.

PhotoCity…… *Microsoft Atrium* (10)
This game is about taking photos of buildings in the real world, scoring points, and owning virtual 3D models of those buildings. Using computer vision techniques developed here at UW, we take the thousands of player photographs and build large, detailed models. Come see how we've enticed students at UW and Cornell into a competition to see which school can best reconstruct the campus in 3D!

Personal Environmental Analytics……*Microsoft Atrium* (10)
Does a toilet or a shower use more water in the average home? The answer may surprise you! Come learn how advances in sensing systems, artificial intelligence and human-computer interaction can be applied to global sustainability problems.

OneBusAway……*Microsoft Atrium* (10)
Where is your bus? Find out online with OneBusAway. See how riders just like you use technology to make sure we don't have to wait for the bus any more than we have to.

Scribbler Robots…… *Microsoft Atrium* (10)
Yes, we have robots! The Scribbler is a fully programmable, intelligent robot with multiple sensor systems that let it interact with people and objects. It navigates on its own as it explores its surroundings, and then reports back about what it senses using light and sound. Come program one yourself!

Teaching Fractions through Video Games……*Microsoft Atrium* (10)
Come explore ways we can teach early math through video games. See how our data-driven approach allows us to collect and analyze gameplay from many children.

Electrical Engineering

EE Laser Tag.....*EEB 303* (11)
Learn about Electrical Engineering by seeing the circuits involved in a laser tag system, and then try them out! *FRIDAY ONLY.*

Sensors, Energy and Automation Lab (SEAL): Robotic Inspector .....
*EEB 059 (*11)
Mobile robot inspects power line cables for incipient fault.

Mobile American Sign Language.....*Microsoft Atrium* (10)
Mobile ASL is a video compression project at the UW with the goal of making wireless cell phone communication through sign language a reality in the U.S. Come and try out our working two-way cell phones!

High Voltage Apparatus from the Past.....*EEB 030* (11)
High voltage apparatus, including a van de Graff generator, Tesla coil, Jacobs ladder, Thomson coil, and Wimshurst machine will be demonstrated.

Radar Remote Sensing Laboratory .....*Sieg 433* (4)
Professor and students will display and describe passive radar for remote sensing of the upper atmosphere.

Vocal Joystick: Picasso's Lego Bot.....*EEB M406* (11)
Control a Lego robot to draw a picture on paper using voice sounds.

Human Centered Design & Engineering

Language Partner Online..... *SIEG 426* (4)
Come try our cutting-edge language learning tool! Language Partner Online (LPO), an innovative software application developed by UW's Technical Japanese Program, helps you master model dialogues effortlessly.

Computing for Health Living and Learning Lab..... *SIEG 313* (4)
Learn about and play with new technologies designed to keep us healthy.

Robots: Fact and Fiction..... *HUB Lawn* (2)
Meet Bucky the robot and learn more about what robots can do.

Assistive Technology for People with Disabilities
(DO-IT) Disabilities, Opportunities, Internetworking, and Technology
..... *HUB Lawn* (2)
Display of technology used by people with different kinds of disabilities. *SATURDAY ONLY.*

Following Your Eyes: See a Replay of Your "Gaze Trail" As You Look at a Website ..... *SIEG 425* (4)
HCDE Laboratory for Usability Testing and Evaluation (LUTE) demonstration of eye-tracking technology.

Rapid Prototyping: Meet the Makerbot!..... SIEG 427 (4)
HCDE Laboratory for Usability Testing and Evaluation (LUTE) demonstration of eye-tracking technology.

HCDE Poster Fair..... *SEIG 4TH Floor* (4)
Interested in learning about cutting-edge research and HCDE student work? Check out or poster fair!

Industrial & Systems Engineering

All ISE exhibits will only be on Friday.

Lego Lab..... *HUB Lawn* (2)
Investigate the concepts of resource allocation and management science by deciding what Lego furniture to build to make the most money.

Industrial & Systems Engineering Education..... *HUB Lawn* (2)
What is Industrial & Systems Engineering? Find out the answer and more!

How Sweet It Is..... *HUB Lawn* (2)
Learn about probability and statistics with M&Ms. How many red ones are in your sample?

The Learning Curve..... *HUB Lawn* (2)
Explore the concept of the learning curve by completing puzzles that will demonstrate how your performance improves with experience.

High-Stakes Routing for Humanitarian Relief..... *HUB Lawn* (2)
Delivering critical supplies is an important function of the humanitarian relief mission. Can you determine the shortest route to deliver emergency services?

Materials Science and Engineering

MSE Welcome Table..... *Mueller Courtyard* (14)
Please stop by the welcome table and pick up a glass bead and a periodic table as our gift to you. Thank you for coming.

Electron Microscopy ..... *Roberts 140* (15)
Principle and applications of scanning electron microscopy.

Solar Cells ..... *Mueller Courtyard* (14)
Learn about how solar cells work.

Slip Casting..... *Mueller Courtyard* (14)
Slip casting, a common technique for making ceramics, will be demonstrated in this exhibit. Visitors are encouraged to participate. *FRIDAY ONLY.*

Composite Materials..... *Mueller Courtyard* (14)
Learn about composite materials and how you use them every day.

Organic Electronic and Photonic Materials ..... *Mueller 165* (14)
Come and learn about organic photonic and electronic materials. *FRIDAY ONLY.*

Thermo-Reversible Gel ..... *Mueller 170* (14)
Come and learn about organic photonic and electronic materials. *FRIDAY ONLY.*

Effects of Hot & Cold on Materials ..... *Sylvan Grove (*12)
See the effects of very hot and very cold on materials from space shuttle tile to racquet balls and marshmallows.

GEMSEC..... *Sylvan Grove* (12)
Materials science inspired by nature.

Undergraduate Research Opportunities..... *Mueller 154* (14)
Get a feel for what it would be like to learn and work as a materials scientist engineer! *SATURDAY ONLY.*

Mechanical Engineering

Introduction to Mechanical Engineering…… ……*MEB Front Lobby* (7)
Learn about Mechanical Engineering from the student chapter of the American Society of Mechanical Engineers (ASME).

Combustion Experiment and Robot Arm..…… ….*MEB Front Lobby* (7)
See a live demonstration of a flame reacting to different gas flow conditions and how to control a robot arm with shape memory wire.

Microcellular Plastics Lab ..... *MEB 129* (7)
Come see plastic foam that has been specially formed so as to create micro-pores or cells. Learn about the many advantages and applications of this material.

Mechanics of Materials Test Lab…….…… ..…*MEB 127* (7)
Learn how engineers test materials and structures using big machines, tiny sensors, light waves and more.

Intelligent Materials…….…… ..…*MEB 134* (7)
Come see solar cells made from dye-sensitized plastic, windows that change color when a voltage is applied, and metals that can remember their shape.

UW Formula SAE Racecar and Human Powered Submarine
..... *MEB South Courtyard (7*)
Come learn about these competitions. See the sub hull and components of the submarine and what it takes the SAE team to design, build, and race among the best.

Polymer Optics and Processing Lab..... *MEB G27* (7)
Ever wonder how email and phone calls are transmitted so quickly? Here is your chance to make some optical fibers you can take home with you.

ENGR 100 Rube Goldberg Machines..... .*Integrated Learning Factory* (8)
Arrays of interesting and fun Rube Goldberg machine projects done by pre-engineering students.

Mechanical Engineering Instructional Shops..... *EGA 116* (9)
A collection of student projects made in the instructional machine shop, including Stirling Cycle engines, race car components, and more.

Living Wall ..... *MEB South Courtyard* (7)
ME Students have designed a porous ceramic material made from recycled glass. Come see a wall made of this new material that can support living plants.

Solheim Rapid Prototyping / Manufacturing ..... *MEB G41 (7*)
This exhibit will present various rapid prototyping and rapid manufacturing technologies used in the creation of object prototypes.

Manufacturing Science & Technology Lab…… *EGA 129* (9)
Learn about modern manufacturing technologies, and see the CNC machines and test equipment.

PZT Thin Film Actuators for Hearing Aids..... *MEB 114 (7*)
Piezoelectric materials can generate acoustic pressure waves when electric voltage is applied. We will demonstrate tiny actuators that fit in the inner ears for hearing rehabilitation.

Cloud Machine .....*MEB G45* (9)
Come see how a cloud generating wind tunnel is used to study rain water droplet formation in clouds.

Cell Biomechanics Lab .....*AERB 317* (6)
We specialize in the design and development of new micro- and nano-tools for biological and medical research. See a demonstration of these technologies.

Nano-Manufacturing Lab .....*AERB 318* (6)
Learn about engineering on the nano-scale. The lab is developing technologies for nano-fabrication, molecular assembly, and nano-sensors and actuators

The Wonder of Gooey and Squishy Fluids .....*AERB 318* (6)
The Soft Matter and Microfluidics Lab works on complex fluids (squishy materials like slimes, shampoos, and ice cream) and the processing of these fascinating materials for use in nano-, bio-, and energy related applications. Come to the exhibit and learn where you can find these cool materials in your own kitchen and bathrooms!

Student Programs, Societies, Corporate Sponsors & Community Organizations

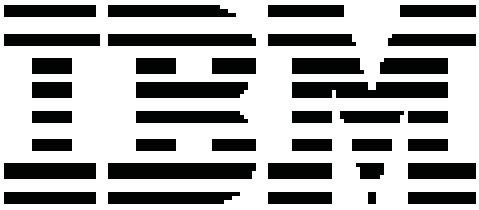
MESA Hands on Activities.....*Sylvan Grove* (12)
Vex Robotics, Sail Cars, Mini Catapults, Straw Towers, and more!

Sea Cadets Blue Angels Squadron .....*HUB Lawn* (2)
Why wait? See engineering in action--U S Navy Sea Cadet Corps. Sea Cadets is for middle and high school students who are interested in the maritime services. There is no military commitment, but there is adventure, opportunity to travel for training, and to be aboard working Coast Guard and Navy ships both dockside and under way. For further information, stop by the information table, or go to:
www.blueangelssquadron.org *SATURDAY ONLY.*

PSEC (Pugest Sound Engineering Council).....*Sylvan Grove* (12)
See displays and learn about many different types of engineering, and become aware of the extensive collaboration required for most complex products (like the design & operation of the Space Shuttle).

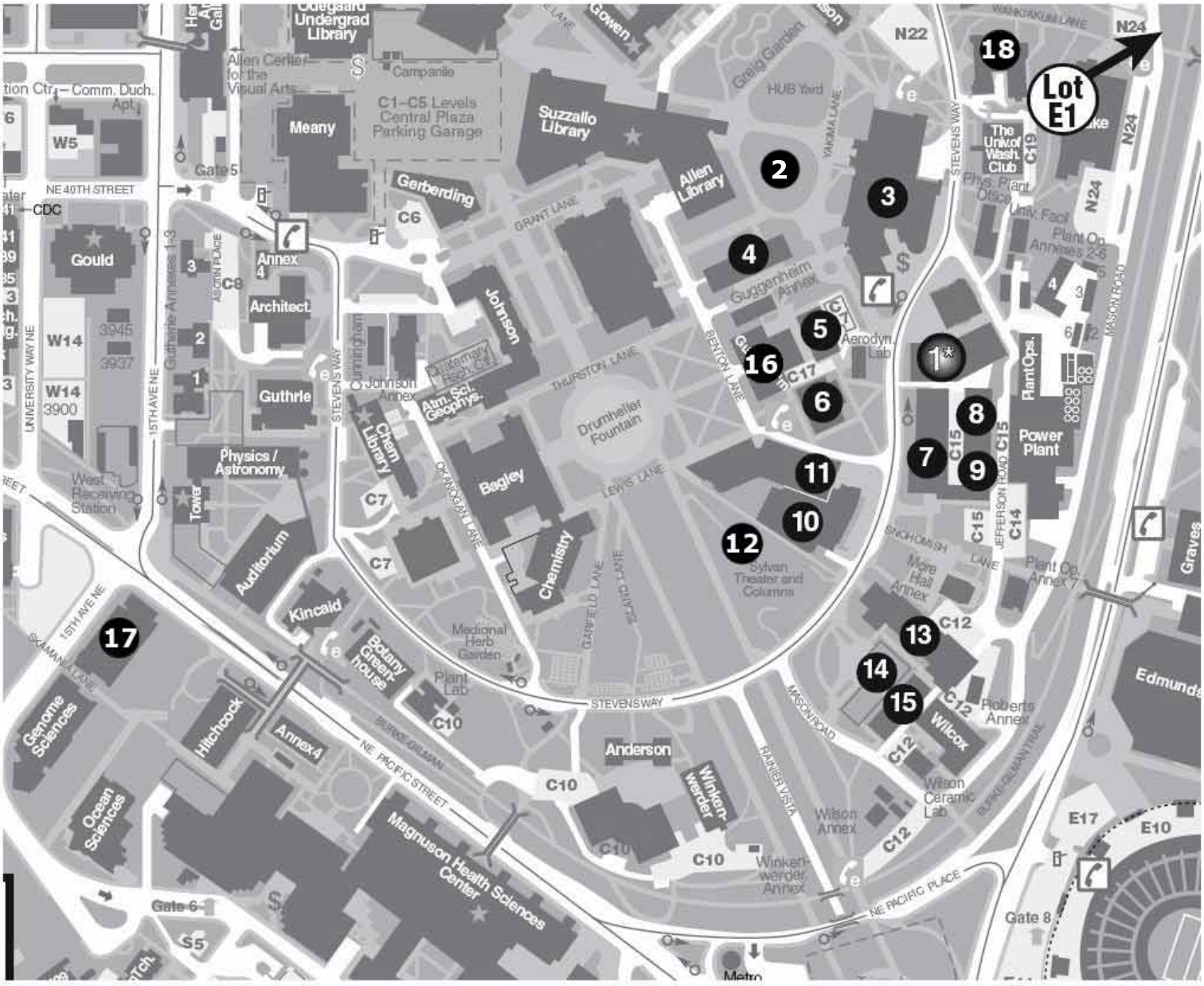
Engineers Without Borders.....*Sylvan Grove* (12)
An overview of EWB projects in Bolivia. Make a simple water filter and have fun grinding grain!

The College of Engineering gratefully acknowledges the following Corporate Sponsors



ENGINEERING DISCOVERY DAYS

Map of Exhibits and Buildings



Welcome Tent / Programs / Information / Lost Children:
- 1 - Loew Hall

Aeronautics & Astronautics:
- 5 - Kirsten Wind Tunnel
- 6 - Aerospace & Engineering Research Building (AERB)
- 16 - Guggenheim Hall

Bioengineering:
- 2 - HUB Lawn
- 17 - William H. Foege Bioengineering Building

Chemical Engineering:
- 2 - HUB Lawn

Civil and Environmental Engineering :
- 12 - Sylvan Grove
- 13 - More Hall

Computer Science & Engineering:
- 10 - Microsoft Atrium

Electrical Engineering:
- 4 - Sieg Hall
- 10 - Microsoft Atrium
- 11 - Electrical Engineering Building

Human Centered Design & Engineering:
- 2 - HUB Lawn
- 4 - Sieg Hall

Industrial & Systems Engineering:
- 2 - HUB Lawn

Material Science & Engineering:
- 12 - Sylvan Grove
- 14 - Mueller Hall
- 15 - Roberts Hall

Mechanical Engineering:
- 6 - Aerospace & Engineering Research Building (AERB)
- 7 - Mechanical Engineering Building
- 8 - Integrated Learning Factory (ILF)
- 9 - Engineering Annex (EGA)

Food:
- 3 - Husky Union Building (HUB) - Friday
- 1 - See Welcome Tent for food options for Saturday

Medical Needs:
- 18 - Hall Health or Call 911