IMPORTANT INFORMATION

Touring the entire site will take four hours.

Children under 16 must be accompanied by an adult.

Stops at Hall A, the Physics displays and the SCOT (city school bus) parking lot have outdoor portable restrooms. The rest are indoors.

The Accelerator Tunnel is not handicap accessible. All other tour stops are handicap accessible.

GETTING AROUND

Shuttle buses continuously loop the Jefferson Lab campus and parking lots. Estimated wait times are 5–15 minutes.

You can walk the entire tour route; it is approximately a two-mile loop.

Report lost children or medical problems to the nearest event worker.

LEARN MORE ABOUT JEFFERSON LAB:

visit www.jlab.org
email jlabinfo@jlab.org
call (757) 269-7100

Mobile-friendly website
oh.jlab.org/

Search for the "JLab Open House" app in Apple and Android markets.

Jefferson Lab
U.S. DEPARTMENT OF ENERGY JSA

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JEFFERSON LAB OPEN HOUSE

A NEW ERA *of* SCIENCE

MAP & INFORMATION

APRIL 30, 2016
9 a.m. - 3 p.m.
No entry after 2 p.m.

WHAT IS JEFFERSON LAB?

The Thomas Jefferson National Accelerator Facility is a world-leading nuclear physics research facility funded by the U.S. Department of Energy's Office of Science.

Jefferson Lab's unique and exciting mission is to expand our knowledge of the universe by studying sub-atomic particles known as quarks and gluons. Scientists know that these building blocks of matter combine to form the protons and neutrons found in the nucleus of the atom. But they don't fully understand how these particles build our world and universe.

To learn more, scientists conduct experiments using Jefferson Lab's Continuous Electron Beam Accelerator Facility. CEBAF acts like a giant microscope, providing an unprecedented view that enables scientists to "see" things a million times smaller than an atom. CEBAF does this by propelling an electron beam at nearly the speed of light into targets located in the lab's four experimental halls. When the beam strikes a target, these interactions are recorded and studied.

To understand the information collected during these experiments, Jefferson Lab theorists develop theoretical models and carry out sophisticated computerized simulations of the interactions. Integrating experimental results and cutting-edge theories helps scientists gain a better understanding of the building blocks of matter and the forces binding them together.

JEFFERSON LAB FACTS

- Jefferson Lab is managed and operated for the U.S. Department of Energy by Jefferson Science Associates, LLC, a joint venture between Southeastern Universities Research Association, Inc., and PAE Applied Technologies.

- To build Jefferson Lab required a $600 million investment by the federal government, the Commonwealth of Virginia, the City of Newport News, foreign contributors and the U.S. nuclear physics research community. The annual budget is approximately $150 million.

- More than 700 people are employed at Jefferson Lab, with a daily site population (staff, contractors, visiting researchers, students) of more than 1,000.

- Approximately 1,500 scientists from around the world conduct experiments at Jefferson Lab.

- A $338 million upgrade to Jefferson Lab's Continuous Electron Beam Accelerator Facility to be completed in 2017 doubles the beam energy of CEBAF and adds new research capabilities.

SUGGESTED TOUR ITINERARIES

SEE IT ALL:

Spend 20-30 minutes at each tour stop to learn a little about everything we do.
Suggested tour time: 4 hours

SCIENCE FOR KIDS:

Watch a liquid nitrogen show and join in the fun with hands-on demos from the lab and other local organizations at **CEBAF Center**, the **Test Lab,** and the **Physics Tent** at **Hall D.**
Suggested tour time: 2 hours

SCIENCE IN DEPTH:

Learn about Jefferson Lab, the importance of basic research, the physics you already know, radiation at Jefferson Lab, and planning underway for a proposed Electron-Ion Collider by attending talks by some of the lab's dynamic speakers. (Seating is limited. For safety, attendance is limited to seat availability.) **Test Lab Conference Room 1227**
Talks offered on the hour starting at 10 a.m.

ACCELERATOR TECH:

Learn about the accelerator technology developed at Jefferson Lab. Take an in-depth tour of the **Test Lab**, **Machine Control Center** and the **Accelerator Tunnel** or **Low Energy Recirculator Facility**.
Suggested tour time: 2 hours

NUCLEAR PHYSICS:

Learn about research conducted with Jefferson Lab's accelerators by visiting **Halls A, C, and D** and the **Physics Tent** holding Hall B displays. Talk with lab researchers, engineers and technicians about their efforts, and interact with collaborating scientists from local universities in the **Physics Tent**.
Suggested tour time: 2.5 hours

*** For help or questions, ask one of our many volunteers!**

CEBAF CENTER

This is the place for hands-on science activities!

Watch liquid nitrogen demonstrations in the auditorium every hour on the hour from 10 a.m. – 2 p.m. Designed for children ages 6–12, but appropriate for kids of all ages.

See supercomputers in our Data Center and visit with Jefferson Lab staff representing Medical Imaging, the lab's Sustainability efforts and on the Electron-Ion Collider.

Immerse yourself in a variety of scientific fields, with demonstrations, exhibits and hands-on activities provided by researchers from local museums, research organizations and universities.

TED BUILDING & TEST LAB

Learn about the Department of Energy and its other national labs, and see actual 3D printed vehicles from Oak Ridge National Lab. Find out about Jefferson Lab's Technology Transfer efforts and see how companies are using the lab's licensed technology.

The Test Lab is where Jefferson Lab conducts world-leading research and development for accelerator components. Fire an accelerator, build your own cavity, witness superconductivity at work, or catch a science lecture.

EXPERIMENTAL HALLS A & C

Descend underground through truck ramps to view the enormous detector systems in Halls A and C. Talk with the scientists, engineers and technicians who design, build and run these behemoths and find out what they are learning about the building blocks of matter.

MACHINE CONTROL CENTER

Visit the nerve center for the lab's Continuous Electrom Beam Accelerator Facility (CEBAF), where operators run the machine. Learn how we generate electrons, accelerate them to almost the speed of light and deliver them to the experimental halls.

LOW ENERGY RECIRCULATOR FACILITY (LERF)

This research machine was developed using the lab's particle acceleration expertise – called superconducting radiofrequency technology. Formerly called the Free-Electron Laser Facility, this machine is now being repurposed to meet a broader scope of research work.

Learn how the LERF works, learn about experiments looking for mysterious Dark Matter, and see yourself in infrared. See where we plan to put a half megawatt of power through a hole the size of a soda straw.

EXPERIMENTAL HALL D

Walk through Hall D's Counting House and into the hall itself. Hear about the research just getting underway in Jefferson Lab's newest research area. Learn how the research in Hall D may help answer the question: Why is one quark never seen alone?

Be sure to visit the exhibits and displays in the Physics Tent adjacent to Hall D. Talk with lab researchers, engineers and technicians about their efforts, and get your hands-on science fix with more interactive demos and displays from local universities in the Physics Tent. A lab Human Resources representative will also be there to answer job application questions.

ACCELERATOR TUNNEL

Jefferson Lab plans to have open one or two sections of the CEBAF accelerator tunnel. Venture 25 feet underground to see the six-ton, 27-foot long cryomodules used to speed the electron beam, and the many electric magnets used to focus and steer it.

CENTRAL HELIUM LIQUEFIER (CHL)

Peek inside our accelerator's refrigeration plant to see the equipment that can cool things down within a few degrees of absolute zero (colder than space!). See the unique nitrogen and helium refrigerators at work.