Exploring CLC as a Living Laboratory

In its Strategic Plan, the College of Lake County (CLC) established this goal to “Promote excellence in the areas of Diversity, Global Engagement, Sustainability, and Wellness as strengths within the college and Lake County community.”

With the building out of its Sustainable Master Plan, CLC is demonstrating to its students and to the community the value of incorporating sustainable technology and environmental systems.

CLC’s campuses provide many opportunities to explore the ten dimensions of wellness. Wellness and sustainability go hand in hand, especially as visitors interact with the different sustainable features on campus and how they contribute to personal experiences of health and wellness.

The Trail is an example of how CLC is a living laboratory, incorporating campus infrastructure and operations into learning opportunities that support education, career development and benefit the community. For this reason the trail is being considered the “Living Lab Trail.”

The Living Lab Trail provides the opportunity for CLC to demonstrate its areas of excellence, not only for current students, but also for younger students and community members.

CLC hoop house – a living laboratory for sustainability and wellness
The Living Lab Trail

Highlighted Trail Stops:

- Campus Farm and composting food scraps
  - Apiary and Bee Campus USA
  - Arboretum and Tree Campus USA
- Prairie, Wetland, Woodland and Lake natural area restoration
- Geothermal Heat Exchange System for three main building wings
- Science Building as example of USGBC LEED Green Building Standards
  - Energy Efficiency with variable frequency drives
  - Solar Photovoltaic (PV) systems, solar shading and heat reflectivity
  - Green Roofs and Rainwater Catchment for Sanitary Use
- Café Willow with local and plant-based prepared meal options
- Bioswales for stormwater management
- Bicycle, Green Vehicle Parking and Electric Vehicle Charge Stations
- Opportunities to explore 10 dimensions of Wellness

Feature Signage:

- Education about sustainable features at the college
- Connections to education, training and careers
- Applications for at home, in the community and around the world
Sustainable Leadership

The U.S. Green Building Council recognizes sustainably-designed buildings through its Leadership in Energy and Environmental Design (LEED) rating system. The Science and Engineering Building received the 2017 Emerald Award for Building Innovation from the organization’s Illinois chapter and is designed to achieve the highest level of distinction, LEED Platinum.

This building uses 55 percent less energy than a typical facility. This is especially remarkable considering that energy-intensive academic programs featuring mechatronics, lasers, and photonics are all housed here.

The geothermal system is a major reason why the building needs less energy. It utilizes the heat of the earth beneath the building for heating and cooling. This is an age-old strategy modernized by technology and our students use the system as a living lab, giving them an edge as they start their careers.

The roof is covered in solar panels and vegetation, an underground tank captures 8,000 gallons of rainwater and re-uses it in the restrooms, and the exterior areas feature bioswales, an electric vehicle charging station and heat-reflective pavement. Enjoy a self-guided tour. There are more informational signs throughout the building.

Wellness

Wellness helps you see and assess the bigger picture of your life. It’s a state of being and a mindset, a choice to change and a choice to embark on a journey toward creating a better version of yourself. Everyone’s path toward wellness looks a little different and is highly individual.

As you explore the Living Lab Trail, consider these concepts of wellness and how a focus on each could improve your quality of life, physical health, education and career.
Living Lab Trail
Feature Sign Examples

Campus Farm
Tomatoes are not always perfectly round. Heirloom tomatoes may be ribbed, bumpy, or pear-shaped, and grow in many colors including purple, orange and green striped. There are nearly 350 farms in Lake County covering 30,000 acres and selling more than $35,000,000 worth of products each year. In Illinois, 97 percent of farms are owned by individuals, family partnerships or family corporations.

Farming 101
The CLC Campus Farm harvests nearly 25,000 pounds of produce each year. The farm produce and honey from the apiary are used at Café Willow for use in its menu and sold at CLC’s seasonal farm market. Food scraps from Café Willow are brought back here, mixed with garden waste and ultimately become compost, feeding healthy microbes in the soil and fertilizing the fruit and vegetable crops.

In the fall, deep-rooting cover crops are planted and leaves from the arborium are spread to protect the garden from erosion and compaction. This sustainable farming practice leaves the soil healthy for the next season’s crops.

At the College
The Horticulture program offers a certificate and an associate degree in Sustainable Agriculture. Students learn how to manage a farming business and to follow natural and organic growing practices. The nationwide need for more farmers is growing, as is the demand for high-quality, sustainably-grown food.

In the Community
Almost half of all organic farms in the U.S. sell directly to consumers, such as through Community Supported Agriculture (CSA) programs and farmers markets. By visiting farmers markets, you can get to know the people who grow your food and help support this vital local industry.

Around the World
Nearly 90 percent of farms around the world are less than five acres in size. The College of Lake County offers study abroad programs where students have the opportunity to visit farming operations in their host countries, such as banana and coffee plantations in San Jose, Costa Rica, or vineyards in Dijon, France.

Connecting the Dots at the Campus Farm
Living Lab Trail
Feature Sign Examples

**Geofield**

The wells in the geofield are 500 feet deep where the temperature of the earth’s crust in this region is always 55 degrees. This makes the system effective and reliable, because that temperature is warmer than the outside air in the winter and cooler in the summer.

In summer, water transfers heat from the buildings into the deep underground wells. In the winter, the opposite process takes place; the intuitive heat from the ground is condensed and circulated through the system to heat the buildings.

**What is a geothermal heat exchange?**

Under the field in front of you is a geofield, the heart of a geothermal heat exchange system that heats and cools the core buildings on campus. This system condenses and transfers heat between the buildings and the earth deep underground.

Students in the HVAC, Engineering Technology and Geology programs observe this living lab to learn how these systems function. This experience gives them an edge when competing for jobs such as professional engineers and system programmers.

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**At the College**

CLC’s geothermal heat exchange system provides a comfortable indoor temperature and reduces our energy costs by 30 percent. Energy intensive chillers and gas-fired furnaces are hardly ever required, as the system draws from the constant 55-degree underground temperature.

**In the Community**

Home heating and cooling consume almost 30 percent of energy bills, with water heating, lighting and refrigeration/freezers at nearly 10 percent each.

Replacing these appliances and fixtures with new, more efficient models is a quick and easy way to use less energy and save money.

**Around the World**

Sophisticated mechanical geothermal heat exchange systems like the one here were developed in the 1940s, but the use of natural heat exchange systems, such as hot springs, has been documented as far back as 10,000 years ago.

Different types of geothermal heat exchange systems are used around the world to heat and cool homes, schools and businesses.

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**Connecting the Dots at the Geofield**
Bike Resource Station

Bike sharing programs are an effective, on-demand service for commuters and tourists, and fun for a short ride around town. One-way trips using a shared bike can make taking public transit more convenient for many excursions.

As shown on the map, the CLC bike trails connect to the rest of Gurnee, the Rolling Sand Beach Forest Preserve, the Washington Street Metra Rail Station, and points of interest throughout Lake County.

Reduce your impact with biking.

Vehicles account for nearly 30 percent of the world's total emissions and every mile of biking reduces that harmful impact. You don't have to bike far or fast, even short excursions have heart-health benefits. Compared to driving, the low cost of biking can't be beat and, if you're running errands, it's a great way to multi-task.

To use this station, hang the bike to allow the pedals and wheels to spin freely. You can use the attached tools to perform basic repairs and maintenance, such as changing a flat tire or adjusting brakes and derailleurs. The College of Lake County is pleased to provide this bike repair station to keep cycling enthusiasts rolling on their route.

At the College

If you've thought about biking to work or school but are concerned about sweating, the Fitness Center, located inside the Athletics Center, has locker rooms and showers available for students and staff. Bike racks are located near the entrances to most campus buildings.

In the Community

The Lake County Forest Preserves, Lake County Division of Transportation and local villages sponsor bike trails across the county and provide maps to help you plan your trip.

Consider joining a bike club to explore with new friends or bringing your bike on Pace busses and Metra trains to travel longer distances.

Connecting the Dots at the Bike Resource Station

Around the World

Nearly half of all residents in Copenhagen, Denmark commute to work or school by bike and a quarter of families with two children use cargo bikes for transportation.

The city's safe and attractive bike lanes are important, but Danes also tend to associate the bicycle with freedom and health, rewarding the use of bikes over cars.
Living Lab Trail
Feature Sign Examples

**Connecting the dots**

**Sun Power**

There are nearly 200 solar panels on the roof of this building. This array generates more than 50 kilowatts of electricity per hour, enough to power 3,500 light bulbs and avoiding 100 metric tons of greenhouse gas emissions per year.

**Connecting the dots**

**Walk it Off**

Walking the Living Lab Trail offers a mindful respite from the workday. Consider walking the short trail around the pond. If you have more time try the full 1.5-mile trail.

**Connecting the dots**

**Clean Energy Careers**

Illinois leads the Midwest in clean energy jobs, employing hundreds of thousands of people in advanced grid technology, clean fuels and renewable energy. Investments in energy efficiency drive the bulk of job growth, supporting over 70 percent of this local workforce.

**Connecting the dots**

**Water Wise**

The water flushing these toilets is filtered rainwater captured in an 8,000-gallon underground tank. This resourceful system protects Lake Michigan.

**Connecting the dots**

**Green Roof**

The roof of the Science and Engineering Building is covered with vegetation planted in a modular tray system. The vegetation adds a layer of insulation and the trays make light work of roof maintenance.

**Connecting the dots**

**Locally grown**

That delicious honey in your tea or on your toast was produced right here on campus. CLC students preparing for careers in agriculture maintain an apiary at the farm.