

ARCHITECTURE AND INTERACTION

The Life Sciences Building is the newest addition to Glendale Community College and serves as the anchor to a developing Science complex at the north end of the campus. The architecture works to integrate the three previously separate departments—Biology, Nursing, and Psychology; and creates opportunities for meaningful interdisciplinary interaction.

BUILDING & STUDENT

"Sticky spaces" throughout hallways outside of labs and classrooms are designed to give students and instructors gathering areas to informally interact and collaborate. The café, mezzanine, and exterior patio also offer larger spaces for informal gatherings.



BUILDING & CAMPUS

The Life Sciences Building interacts with the campus by both complementing and adding to the existing architectural vocabulary. Drawing from the materials and textures of the campus, the building is composed of masonry, glass and copper. Spatial geometries of the existing buildings are recognized in the massing of the Life Sciences Building which has the third floor overhanging and shading major walkways, entrances and outdoor gathering spaces around the building.

BUILDING & SUN

The copper clad top floor of Life Sciences celebrates the sun's incident rays while simultaneously shielding spaces from their intense heat. The top oversized mass protects the glass enclosed faculty floor below. To protect itself, the copper skin takes a cue from nature with horizontal inflections and vertical fins. The panel system creates self-shade similar to the ribbed profile of a saguaro cactus. Visually, the various widths and depths of the components create dynamic compositions of light and shadow. Through the changing shadow patterns, nature's temporality is effectuated in the building's façades.



BUILDING & RAIN

Rain collection at Life Sciences is a choreographed event. Storm water from the roof is collected and released to the north where it merges with surface runoff from the adjacent parking lot. The water is carried down a swale and back around the building to feed the landscape to the south. Native plants and trees flourish and the resulting riparian habitat functions as a field laboratory for the Biology department.

ARCHITECTURE AND SUSTAINABILITY

BUILDING IS SELF SHADING

The massing of the Life Sciences Building creates large overhangs which shade the lower floors of the building and protects the large areas of glass on the second floor from being in direct sunlight. This lowers the energy consumption of the building by requiring less cooling in the hot summer months.



NATURAL LIGHTING

Natural lighting is incorporated throughout the building as a way to reduce the need for artificial lighting. The entire second floor has a glass exterior, and offices on this floor have 18 inches of glass clerestory to allow light to penetrate to the heart of the faculty office floor.



RAINWATER HARVESTING

Rainwater is used to irrigate the landscaping rather than being routed to a storm sewer.

ENERGY EFFICIENT MECHANICAL AND LIGHTING SYSTEMS

Mechanical and electrical systems in the building conform to the latest and strictest codes for energy consumption and performance.

BUILDING HIGHLIGHTS:

- First 3 story building on campus
- 62,046 square feet
- 6 general classrooms
- 9 biology and psychology labs
- 2 patient simulation rooms and 4 exam rooms viewable from central observation room
- Large dividable nursing lab
- Nursing practice lab with 8 beds
- Vivarium with 3 animal rooms and support spaces
- 61 faculty offices
- 3 conference rooms
- Adjunct faculty space and workroom
- Greenhouse and Riparian habitat
- Café
- Living wall and irrigation seeps are highlights of the landscape design



The new Life Science building at GCC was designed to be environmentally friendly. In fact, it meets LEED silver certification. LEED is Leadership in Energy and Environmental Design, and is all the rage in architecture. LEED is a green building certification system verifying that a building was designed and built using strategies to improve performance such as energy savings, water efficiency, CO₂ emissions reduction, improved indoor environmental quality, and stewardship of resources and sensitivity to their environment. Certifications can be gold, silver or platinum. So far there are 2476 LEED certified buildings (May 2010) in the United States. ASU's building B (2006) was the first platinum building in Arizona. ASU will only build LEED buildings from now on. GCC's LS building could be certified silver if we paid for it. We are going to go look at the "green" features of this new building in lab this week.

CHM 107 Lab Field Trip Report

NAME: _____

1. What can be recycled at GCC? _____

2. Can we recycle glass on campus? Yes or No. _____
3. This area acts as a buffer to prevent the west sun from heating up the offices and classrooms. _____
4. These are used to prevent the sun from hitting the windows thus heating up the building during summer, yet allow winter sun to shine inside the windows for natural heating during the winter.

5. This type of lighting uses no electricity and is used on the 2nd floor extensively. _____
6. This is collected and used to irrigate the plants next to the building. _____
7. These are electromagnetic thus more energy efficient than regular ones. _____
8. What color are the chairs out front that are made of recycled plastic? _____
9. This endangered species has a pond in the SW corner. _____
10. This metal is used on the exterior and is self-sealing if cracked. _____
11. The plants around the building grow in Arizona naturally, they are not imported plants, and are thus called _____ plants.
12. What is the purpose behind having a LEED building in the first place? _____

13. These systems in the building conform to the latest and strictest codes for using the least amount of energy possible. _____ and _____
14. The landscape includes a living _____.
15. LEED certification is awarded when a building significantly reduces _____ emissions.
16. True or False. The LS building was the first LEED building in the Phoenix area. _____
17. What campus has vowed to only build LEED buildings. _____
18. The toilets and sinks are all low _____.
19. All the doors are made out of _____ materials.

Bill Nye Transportation Video Questions

1. The biggest source of pollution in America is now _____.
2. Burning gasoline produces _____ and this is a problem, they pollute our world.
3. One solution to gas burning cars could be _____ vehicles, they have lots of torque, but the only problem is that they don't go real far on one charge.
4. Cars with gas and electric engines are called _____ cars.
5. Fuel cell engines produce this as their exhaust: _____.
6. Fuel cell vehicles convert _____ into electrical energy by a chemical process.
7. If we converted diesel buses to fuel cell buses we would save _____ % of the energy we would have used.
8. Gas is octane, while natural gas is _____.
9. When we burn octane, we produce _____ dioxide along with other dioxides like sulfur and nitrogen oxides, as well as soot.
10. The key to fuel cell vehicles is finding a source of _____. Fuel cell engines are two to three times more efficient than gas engines.
11. A dream would be to have all our power from _____ sources like wind, solar, hydrogen, so that we don't have to import any fuel and so that we don't have to worry about greenhouse gases.
12. This video looks at the traffic in this wonderful city: _____. This city is a textbook example of urban sprawl.
13. There is no benefit to having more than this many lanes of traffic: _____. Any wider and you see reduction in traffic due to entering and exiting the highways.
14. Simulating traffic by computer programs is so complicated one speaker in this video says it is more complicated than rocket _____.
15. We must change the way we travel around, or we'll be in gridlock traffic all the time. Name two things you can do personally to help the traffic problem.
