Kolligian Library, the first facility constructed at UC Merced, has exceeded the campus’s rigorous LEED® Silver standard for new construction and earned Gold. The building’s flexible spaces support a variety of studying styles and activities by giving students the freedom to create their own learning environment.

Kolligian Library is not a typical library. Instead of demanding a silent and sterile environment, the building has flexible spaces, furniture and policies that encourage students to personalize their study experience. The building also provides freedom from the rigorous demarcation between interior and exterior environments usually seen in library facilities. On top of breaking with these library design traditions, Kolligian Library has joined a small and elite set of higher education buildings that have earned LEED-NC certification at the Gold level from the U.S. Green Building Council.

Features that enable Kolligian Library patrons to remain connected with the environment are part of a larger sustainable design ethos that not only shaped this project, but guides the design of every new campus facility. An ambitious standard was adopted in the university’s early planning phases to certify all new construction projects at a LEED Silver level. With the library earning Gold, the campus surpassed expectations with its very first facility, a feat it continues to do regularly as the building stock grows.

Rethinking how students use libraries has led to several novel policies at Kolligian Library. Food, drinks and cell phones are welcomed and students are encouraged to reconfigure furniture at will.

To create a sustainable facility, the Kolligian Library project team first focused on the building’s orientation and envelope to reduce the amount of energy used for heating, cooling and lighting. The library is positioned on a north-south axis to take advantage of breezes coming off a nearby lake. The western facade has fewer windows to limit heat gain and lower cooling requirements. High-performance window glazing helps optimize daylight levels.

UC Merced’s first facility boldly reconsiders the best ways to support the learning and research needs of today’s students. Instead of the rigid and fixed furniture typically found in a library, the building offers a variety of comfortable, movable furniture to encourage students to create their own study spaces. A unique policy welcomes food, drinks and cell phones throughout the building. These departures from the classic library model increase the flexibility and functionality of Kolligian Library, enabling students to use library space as they truly want.

The library’s open atmosphere is reflected in a similar expression of openness between interior and exterior spaces. A four-story atrium connecting the building’s east and west wings features four sections of roll-up doors that create a large open-air room when raised. Shaded loggias and broad arcades form additional exterior rooms for gathering and socializing, creating middle ground between being truly outdoors and being inside the library. Finally, ample daylight and views are provided throughout the building so visitors and occupants can retain a relationship with the outdoor environment, time of day and seasons.
while limiting solar gain. The library also has external light shelves, fritted glass sun shades, and architectural trellises that allow daylight to enter the building without creating excessive cooling loads.

Proper orientation and envelope design are just a few of the features that help the library use 38 percent less energy than mandated by California’s Title 24 energy code. An insulated concrete shell is used to provide thermal mass, which helps moderate indoor temperatures and reduces the need for mechanical conditioning. During the day, the thick walls absorb heat and slow the rise of indoor temperatures. When the outside temperature drops at night the walls radiate heat back to the outdoors and the building mass cools, ready to absorb heat again the next day.

The campus chilled water system is perhaps the most important factor in achieving energy efficiency goals at Kolligian Library. The system begins with a two-million gallon thermal energy storage tank that chills water at night. The water is discharged through the loop during the day to cool buildings without requiring activation of the central plant’s chillers. This load shifting strategy saves energy and money by running chillers during cooler nighttime hours when electricity rates are lower.

Kolligian Library boasts excellence in a range of sustainability issues in addition to its impressive energy performance. Low-flow fixtures including waterless urinals reduce annual water use by 26,400 gallons, or 42 percent less than a baseline building. Supportable materials that were manufactured locally or contain recycled content can be found throughout the project. Ceiling tiles contain 77 percent recycled phone books and newspaper, carpet contains 40 percent recycled content, and structural concrete is a 15 percent fly ash and valley aggregate mix. Finally, showering and changing facilities in excess of LEED requirements are provided to encourage staff and students to bicycle to the building.

**LESSONS LEARNED**

Mark Maxwell, UC Merced’s LEED Coordinator, warns campuses to be careful during the value engineering process for buildings that are intentionally designed to meet LEED requirements. In the Kolligian Library project, office spaces were configured to optimize daylight and views for occupants. During the VE process interior walls with glass clerestory tops were replaced with modular I-line walls. This had the unforeseen consequence of disrupting occupants’ access to views and prevented the project from earning that LEED credit.