



a Sustainable Living-Learning Community



RESIDENTIAL WING

This wing would house UD students choosing to live in a Sustainable Living-Learning Community. Students living in this community would pledge to minimize their energy consumption by conserving electricity and water, plant and tend the organic garden, recycle, and compost to reduce waste. Similar to the UD Art Street model, students would also be required to take a seminar on sustainability.

DESIGN & LEARNING OBJECTIVES

Students in a new biology course, Sustainable Living-Learning, participated in a group-learning model to develop a strategy for the University of Dayton to build a sustainable living-learning complex that would provide a regional example for resource conservation, student life, research and student living. This was a true interdisciplinary class with students from biology, environmental biology, geology, environmental science, mechanical and civil engineering, sociology, psychology and international studies.

Each class week was a combined lecture and discussion format. After the first few weeks of the semester, one class period a week was dedicated to taking out into groups and working on the project.

The class was divided into three interdisciplinary teams to design the following building concepts: 1) Green Gardens & Composting and 2) Water Conservation and Grey Water Recycling.

Three interdisciplinary student teams frequently interacted and exchanged information with each other to ensure continuity between the design concepts.

STUDENT LEARNING OUTCOMES
Students proposed an integrated learning space that would serve 75-90 students who would learn the principles of sustainability while practicing those principles where they would be building. The building would also be a setting for the student-Dorothy Stang Memorial Tropical Garden, a dedicated glass atrium for education and reflection. The 20-year cost of running, maintaining and repairing the building, the proposed facility would pay for itself by significant energy savings and generation as well as water treatment.

The results of their group project at the University of Dayton Stander Symposium for Graduate Research as a series of four course posters. The students also organized an in-class presentation to university students, facilities staff and university administrators.

The concept was so well received by university President Dan Curran that the building was officially added as part of the University of Dayton's 5-10 year building plan.

The engagement learning model taught students how to research a problem from an interdisciplinary perspective and apply that research to accomplish a real world goal.

Most of the students from this class are currently either an M.S. or Ph.D. in some environmentally related field, with six of those students earning graduate degrees in sustainability, environmental law or policy. Two of the six students are dual degrees in environmental science and engineering. Many students in the class stay in touch via exchanging sustainability data/news, and the

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The diagram below represents a possible layout for the energy efficient and environmentally friendly building, the Dorothy Stang Sustainability Center (SSC), as designed by the Honors Biology 359 course Sustainable Biosphere. Several aspects of the green model, including energy efficiency, hydrology, and vegetation were researched extensively by the class to develop a sustainable, albeit plausible, building UD could choose to construct on the recently acquired land near the Great Miami River. Other cost-effective sites are also possible on other parts of the UD campus. In addition to a residential Living-Learning Community for undergraduates, the proposed layout includes academic space for both UD students and the community. The SSC was designed by students in the class to be a LEED-certified building.

EDUCATIONAL WING

This wing would house faculty offices, labs, classrooms, and space for related student organizations like Roots and Shoots, as well as possible space for the Sustainability, Energy, Environment (SEE) and the Rivers Institute. An underground auditorium space and cuts heating and cooling costs. As part of the Sustainable Living-Learning Community outreach goals, the Educational Wing would also house a library of resources related to the environment, energy, and technology to help educate the community about sustainability.

SCALABILITY OF LEARNING MODEL

Providing the students with an architectural design challenge to research, learn and integrate the various aspects of sustainable design into a STEM teaching model that can be used in a variety of different types of courses across the U.S. The second semester course was taught, I changed the design project to the renovation of an existing dorm on campus. Although the goals had changed, the course STEM learning objectives were achieved successfully. Although new to SENCER, I believe using a sustainable design learning model can be adapted to a wide variety of courses around the nation to effectively teach the interdisciplinary nature of STEM.

Class Discussion Reading List

E. O. Wilson, The Future of Life; William McDonough and Michael Braungart, Cradle to Cradle: Remaking the Way We Make Things; Michael M'Gonigle, Planet U: Reinventing the University; Andres R. Edwards, The Sustainability Revolution: A Paradigm Shift; Jane Goodall, Reason for Hope

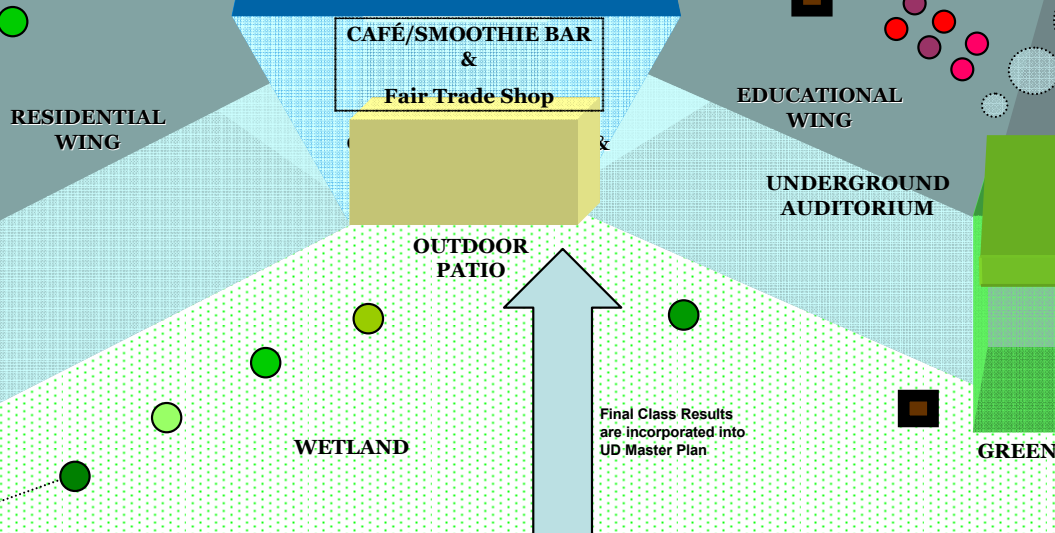
ACKNOWLEDGEMENTS

I would like to acknowledge the hard work and team-work demonstrated by the students in the sustainability class. I would also like to thank the staff of the Adam Joseph Lewis Center at the College for generously taking the time to provide four of their sustainable facility. I also greatly appreciate the support of Drs. Paul Benson and Don Paillet for their support of both faculty/student sustainability efforts and curricular innovation. Finally, I would like to thank UD President Dr. Dan Curran by providing the ultimate inspiration by taking their design concept and putting it into UD's campus build

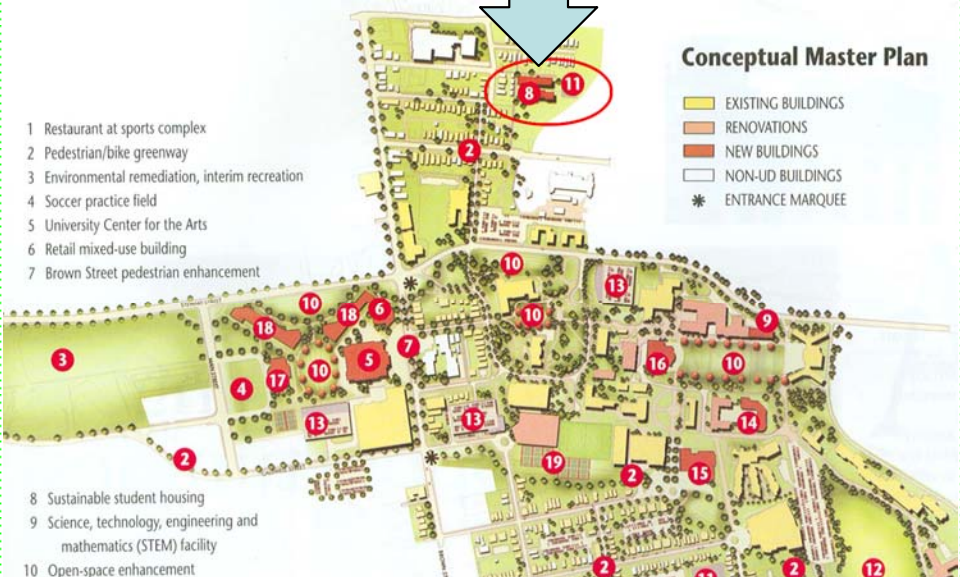
Memorial Inspiration

DOROTHY STANG

The structure commemorating the spirit of the SSC's namesake will also be featured in the Greenhouse. The Dorothy Stang Memorial will be erected in honor of Sister Dorothy Stang, a missionary nun originally born in Dayton, OH but later murdered in the Amazon rainforest for her devoted protection of the poor and the environment. The memorial, displaying tropical Amazon plants, butterflies, and a waterfall, will be located in the central portion of the complex to serve as a point of reflection and inspiration.



Final Class Results are incorporated into UD Master Plan



- 1 Restaurant at sports complex
- 2 Pedestrian/bike greenway
- 3 Environmental remediation, interim recreation
- 4 Soccer practice field
- 5 University Center for the Arts
- 6 Retail mixed-use building
- 7 Brown Street pedestrian enhancement

Conceptual Master Plan

- EXISTING BUILDINGS
- RENOVATIONS
- NEW BUILDINGS
- NON-UD BUILDINGS
- ENTRANCE MARQUEE

- 8 Sustainable student housing
- 9 Science, technology, engineering and mathematics (STEM) facility
- 10 Open-space enhancement

