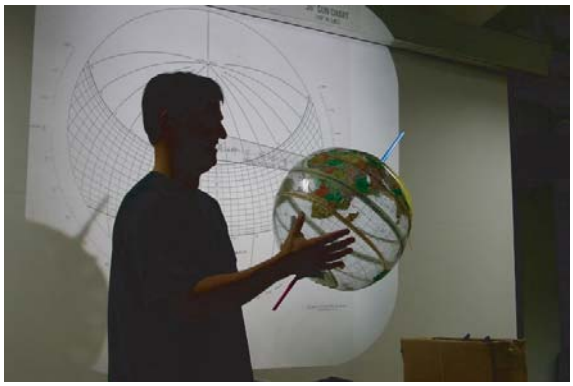
An Educational Collaboration

The CU Solar Decathlon project has been a unique collaboration between the College of Engineering and Applied Science and the College of Architecture and Planning. Over the past year and a half, more than sixty engineering and architecture students have been involved with the delivery of our contest entry.

Our design has been developed through a suite of courses and independent study activities in engineering and architecture. The most coordinated effort was in Fall 2001, when parallel courses were offered to 34 students in architecture and engineering with the specific objective of designing our entry. While architecture and engineering students focused on their respective disciplines, there were regular design reviews and significant teamwork between the classes.

Oddly, as the dust settled at the end of the semester, this coordinated process produced a design that was unsatisfactory to the core group of Solar Decathlon team members. In January, this group of a dozen faculty and students defined a clear set of design objectives. With these guiding principles in hand, the team developed the core of the current design. Architectural and engineering details were developed through another architecture course in green building technology and a series of engineering independent study efforts.

While we expected the design process to be an integrated educational experience, perhaps the greatest learning occurred in the many activities of the project that were unrelated to engineering and architecture coursework. The team also had to raise money, procure equipment, market the project to campus administrators and funding agencies, interact with the media, and educate the public. Finally, we had to actually build the house. Working with sponsor M.A. Mortenson Construction, the students worked shoulder-to-shoulder with construction managers and laborers to build the house in six short weeks. We like to think we taught them some lessons as well.



The ultimate objective of the Solar Decathlon is education, not only of the students, but the building industry, policy makers, and the public. While much of the outreach related to the project will occur back in Colorado after the competition, we have also produced material and given presentations to school children and community groups over the course of the development. Some of this material was included on an informational bus that toured Colorado during the summer.

The University of Colorado is a unique academic environment for Solar Decathlon activities. The Department of Civil, Environmental, and Architectural Engineering has two programs that are particularly relevant. At the undergraduate level, the Department offers a B.S. degree in Architectural Engineering that is one of only thirteen accredited programs in the country. The AREN degree integrates coursework on architecture, structural engineering, mechanical engineering, electrical engineering, and construction management into a comprehensive and applied program.

The Department also offers a Building Systems Program at the graduate level that leads to Master of Science and Doctor of Philosophy degrees. Graduate level courses include thermal analysis of buildings, design and simulation of building HVAC systems, building control systems analysis, building energy conservation analysis, and advanced solar system design and analysis.