



International Senior Design Program

“Students enroll thinking they will do a senior design project to benefit people of the developing world; and they do. But in the end, many students also see the experience as life changing. It is more than a senior design project—it is a class on life. For me, it is a dream job because it goes straight to the heart in so many ways. —Linda Phillips, ISD Advisor

Construction work in underdeveloped areas is typically less complicated and often carried out with basic tools, creating excellent learning opportunities for undergraduate students. The *ISD* classes involve two weeks of volunteer construction work in the developing world to learn tools, techniques, and materials. Students also meet with people from the community and gather data for their design projects while in-country. Returning to Michigan Tech, students then generate feasibility analyses, preliminary designs, and final engineering design documents. In addition to engineering skills, they learn team building, creative problem-solving, and cross-cultural communication. The *ISD* program also uniquely incorporates the direct experience of Michigan Tech alumni, who work in tandem with students, providing valuable mentorship, passing along their professional and technical expertise to these future generations of engineers.

Linda Phillips

Linda Phillips has over 20 years of industry experience in the management of design and construction projects in both heavy and building construction. Phillips is a registered Professional Engineer, a Project Management Professional (PMP), and a Certified Documents Technologist (CDT). She received the CEE Department *Howard Hill Teaching Award* in 1999 and 2000. In 2004, Phillips advised the Bolivian ISD Team, *Equipo Septico*—Leslie DellAngelo, Chris Fehrman, and Kimberly Kimmes—that won third place in the *Parsons Brinkerhoff Environmental and Water Resource Student Design Competition*.



Projects and Construction

Linda Phillips, a lecturer at Michigan Tech since 1998, began the *International Senior Design* program in January 2001, with a trip to Bolivia with 12 students. To date, 105 students have participated, and of that group, 10 have returned to complete additional projects! This experience, however, is not limited to CEE engineers. Currently, Dr. Sandra Sandoval’s Spanish class is translating engineering reports into Spanish, so that they can be distributed to Bolivian “clients.”

The Walter Henry School in Santa Cruz, Bolivia, has been one of the ongoing construction sites for the *ISD* Program. Volunteers, students, and local labor have built new school rooms each year. This school has grown from seven to over 200 students! In 2005, two classes worked in Bolivia, adding another four rooms to the school. They also designed school septic systems, formulated plans for storm drainage problems, conducted a structural analysis, and performed a feasibility study for wetland reclamation. Three former *ISD* students returned as mentors: Marc Plotkin ‘01, Tim Elmore ‘02, and Tim Martin ‘03. To see other *ISD* projects, go to www.cee.mtu.edu/projects.

“The biggest changes didn’t happen in Bolivia or a week after I got home. They happened weeks and months afterwards. I look forward to those specific or gradual changes with an open mind and a broader view of life. Thank you for allowing me to participate in your adventures.”

—Justin DeLorit, *ISD*
Environmental Engineering