**Building Connections: Service Learning Projects Here and Abroad**

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Connecting classroom instruction with the real world takes many forms, and one ideal engagement for students is the potential to apply this learning to service. Service learning enhances and deepens students' understanding of an academic subject, develops leadership and life skills, and engages them in critical reflection about individual, institutional, and social ethics. "Although the application of academic skills is a necessary corollary to the service, empathy that emerges as a consequence of that experience is immeasurable," says Scott Kramer, professor in charge of service learning at the McWhorter School of Building Science. According to Kramer, the school has more than 30 years of experience performing service projects. Historically, projects were often undertaken as part of the concrete structures class where students poured concrete slabs for non-profit organizations. These concrete projects, were started by Professors Michael Hein and Steve Williams to provide hands-on experiential learning for the students. In order to build on that history of service, starting Fall semester, Building Science will offer a Service Learning Field Lab as a requirement in the fourth year of the professional program. Student teams will work with non-profits to conduct a service learning project and integrate all components of the construction process. During the spring semester, non-profit organizations will present project opportunities, and the teams will choose the project they will work on in the fall semester. Students will have to come up with a plan in the first three weeks of the semester, have ten weeks to work on the project, two weeks to make a completion video/class assessment, and wrap it all up during final exams with a presentation to the class and client.

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**International Service Project Construction in Culture: Ecuador**

When the school expanded the program to the international arena in 2010, projects were undertaken as joint ventures with a non-profit group called SIFAT (Servants in Faith and Appropriate Technology) located in Lineville, AL. The class, Construction in Culture-Ecuador, is in high demand and seats fill early, often there is a waiting list for the next semester. Teams taking this class have travelled to the suburbs of Quito—Calderon and Aida Leon. This is the ninth year that students have gone to Quito, Ecuador. Professors Alan Bugg, Wes Collins, Ben Farrow, Junshan Liu, Darren Olsen, Bruce Smith and Robert Finkel (Graphic Design) have traveled with the teams. Construction projects are typically a small church or an addition to an existing church in poor urban areas. These buildings are used as after-school programs during the week, giving children from poor families a safe place to meet. One of the joint-venture partners, Compassion International, provides meals, uniforms and tutoring services to the children. A project typically runs for two years and is sponsored by a SIFAT graduate. The Auburn team has been referred to as the Point of the Spear because it is the first team to venture into the new construction project, often digging footings for the foundation. SIFAT and the church typically host 20 different volunteer teams during the year that work on various aspects of the project at any given time. "There are also several ongoing design projects in Ecuador," said Kramer. The project in Aida Leon, Ecuador, organized by Professor Junshan Liu, will map the area around the construction site with LiDAR laser scanning equipment. Liu and his students will use the data to create a point cloud of the area and then create a BIM computer model of

the new church. Graduate and undergraduate students that work on their MBC capstone or undergraduate research thesis usually work on these types of design projects. Students have taken existing building designs and provided SIFAT and the church with value engineering, constructability analysis, cost estimates and construction schedules.

**A Week in the Service of Others: Ecuador**

In Spring 2017, 15 Building Science students registered in Construction in Culture—Ecuador, traveled to Quito, Ecuador. Auburn University partnered with SIFAT to build an extension to an existing church, a narrow three-story Concrete Masonry Unit (CMU) structure envisioned to function as an afterschool center for underprivileged children. Students Erin Allee, Justin DaValle, Mitchell Davis, Grant Dohrenwend, Charlie Esskuchen, Trent Huffines, Richard King, Sam McMath, Chase Merrill, Scott Osborne, Trey Phillips, Francisco Santiago, William Speaks, Cameron Waddle, Allan Bugg and Mark Walsh assisted local builders and used technology common to developing countries.

Their time in Ecuador began with a historical tour of the area. These tours were the beginning of their connection to the culture and to the people with whom they would be working. The group learned about the cultures surrounding this unique spot on the globe during an excursion to the "Middle of the World" at two different locations for the Equator. They climbed 14,000 feet during a hike in the Andes mountains, followed by an architectural tour of various churches and statues and learning how they were built. They visited the Basílica del Voto Nacional, a gothic cathedral that took more than 400 years to build. "The architecture tour of the Basilica was incredible," said William Speaks. "The trip was structured not only to serve the people of Quito, but also to teach us differences in construction practices and allowed us to learn even more about the culture." The team spent five days at the construction site. They learned quickly that construction practices in the United States may not always be the best solution to problems for other countries. Without the luxury of any machines, they learned to mix everything by hand. In place of cranes, they created assembly lines up and down the stairs to move supplies. Along with mixing concrete and mortar, they bent rebar and tied it by hand. For many, it was definitely a learning experience realizing that technology common for third world countries was very different from what they were used to stateside. Soon, four columns, a staircase, and four layers of block for the outside walls emerged. They learned to build the formwork for the four columns. The teams began pouring concrete into the columns using their assembly line of concrete buckets. The next couple of days saw people spreading stucco on the second floor walls, while others laid block on the third floor for the exterior walls. The maestro checked to see if the spacing between the blocks were correct. Once the block was correctly placed, mortar was used to fill in the cracks. They had teams of two working on different sides of the building, laying block and filling cracks, while others were mixing and keeping the mortar from getting dry. "It was an amazing opportunity to combine academics and culture," said Allee. The students felt confident that the job was being done according to local standards, because the superintendent and the project engineer instructed them about the process. "They made sure we knew exactly how to tie rebar, how to prepare the right mixes for concrete and mortar, and how to lay the blocks. It was very easy to learn the thought process behind it." For many students, the experience provided them with a framework for thinking about service and what it meant to be civically engaged on an international stage. "The goal of the service learning program is to plant the seed of service in the students' hearts and minds," said Kramer. "Once completed, the hope is that they will carry on this mission in their professional careers too." Service Learning classes and projects are supported by a gift from the Allison and Jim Gorrie Foundation. The Foundation promises an enhanced educational experience for students in the program. It will also develop a new generation of students who think beyond their borders, and use service as a way to help improve the lives of people in the world. Currently, Quito is the only international service learning class in place, but Kramer hopes to replicate that experience in Panama and Cuba. Working with Third Lens (a non-profit ministry, led by Brian O'Neil, and Caroline

Garner, an MBC alum) and Keith Foster with the Auburn United Methodist Church, Kramer hopes students can participate in building 50 homes, over the next five years, made using tube steel in the northwest corner of Panama where the indigenous Gnobe People live.