China Megainfrastructure Study Abroad Program (Civil Engineering)

Directors: Dr. Rick Balling and Dr. Grant Schultz
Dates of Travel: May 25 – June 9
Program Locations: Beijing, Tianjin, Yichang, Shanghai, Guangzhou, Shenzhen, and Hong Kong
Participating Major: Civil Engineering
Number of Student Participants: 12

The purpose of this program was to experience innovation in mega designs for China's city planning and structures. Before embarking on our trip to China, each student was placed in a team that focused on a particular city featured on our trip. We worked hard on researching the unique qualities of each city's transportation systems, skyscrapers, and bridges. Our first city was Beijing. There, we met with one of the structural engineers from ARUP Engineers. He presented some technology and structural elements of their next project in Beijing. We also visited the Temple of Heaven, Beijing City Planning Museum, and Tiananmen Square. Of course, we made a stop at the Forbidden City and the prominently known Olympic Bird's Nest. We sweated our way to the top of one of the Great Wall's sections, but stared in awe at the vastness of the never-ending wall.

Our next stop was a fast one in Yichang, which is home to the Three Gorges Dam. Shanghai shocked us with the number of tall buildings that grace the skyline lights each night. We rode one of the fastest elevators to one of the world's tallest building. We were also given a tour of the office of Thornton Tomasetti in Shanghai. To satisfy the child in all of us, we spent a day at Shanghai Disneyland. We were fortunate to interact with Chinese students who study transportation engineering at Tongji University. We discussed our research, presented our thoughts on transportation systems in China, and created friendships.

Short trips were made to Guangzhou and Shenzhen. We learned that Shenzhen has quickly become one of the leading cities for megastructures. Also in the Guangzhou area, we toured the ATL factory. Our last city was Hong Kong. In this city, we took advantage of the easy navigation of its transportation system to tour and enjoy the fast city life.

This program helped foster skills in teamwork and leadership. Each team was required to work together in unity to create a fictional sustainable complex. Additionally, we each brought research on a specific aspect of a city's transportation system together to write a professional paper. Each student experienced how to be a follower and a leader at certain times throughout the projects.

Traveling to a country that is quite different culturally can be quite traumatic. Fortunately, while studying our assigned cities and emailing with our Chinese contacts, we were able to increase our understanding of their culture. This was especially true when we interacted with the students at Tongji University in person. As we travelled in the cities and came into contact with the local people, we gained an appreciation of a culture that is very different from ours.

The projects that were assigned to us for this program were incredibly helpful in attaining technical competence. For the megastructures section of the

class, we used spreadsheets and various equations to calculate a 300-meter tall skyscraper. We also calculated costs and benefits to our "greenplex". Understanding the design processes helped us understand the buildings when we went to visit them in China. For the megacities portion, we studied and how each city has met their transportation needs through sustainable methods. We then evaluated how these methods have impacted the city's people, economy, and environment. By exploring the cities in such a way, we came to a better understanding of what a balanced city should look like.

Short Quotes from Students:

"Being a civil engineering student I have only been able to study infrastructure and buildings located in the United States. Because of this, I never had the opportunity to know what other systems may exist in the world and if any of these systems are more effective than what we have in the US today. Having gone to China, I have learned a lot in broadening my perspective on what forms of transportation and structures can be used to sole a specific problem in the world."

-Stewart Perry

"I just thing it was amazing to see the difference in infrastructure between China and the US, and what China is able to accomplish with their buildings/transportation systems in order to accommodate their massive population. Personally it makes me more interested in structural engineering than anything else, because of what they are able to accomplish over there. Since I was a little kid, I've always been fascinated by skyscrapers and tall buildings, and China's buildings made me feel like a kid again."

-Jordan Thorpe

"I learned that in China there are a million people who could do my job."

-Tyler Mickelson

"Visiting China helped me see that there were many different approaches and methods to solve the same engineering issue. I want to learn how to be the bridge between different methods, so that we can all build a better world together."

-Shannon Oh