Purpose
IPRO 315 asks architectural and engineering students to design a large-scale structure, incorporating the technical knowledge learned in the classrooms.

Background
- The Spring 2009 semester started the current project recreating the design of a 22-story building located in Oak Brook, IL.
- In the previous semester, the building had torsion problems due to wind and seismic loads, making the building unstable.
- This caused the building to twist off its foundation.

Objective
- The team's goal is to recreate the design of The Phantasy Hotel, fixing the previous semester's problems.
- At the end of the IPRO semester, the team is to have completed drawings that can be sent to contractors and developers for construction.

Methodology
- As a simulation of a real team from a design firm, this was the first time that team members were asked to work on a "real life" project.
- It was important for both groups to be able to work together to achieve the goals ahead of them, so a big emphasis was put on management, ethics, teamwork, and leadership.
- An AutoCAD standard for project drawings was created to prevent confusion.

Progress & Conclusion
- The team moved the concrete "core" of the building five feet towards the center.
- This is a better placement as the center of mass is closer to the geometric center, reducing the twisting in the building.
- After an 3D analysis of the building on the computer modeling program, SAP2000, the Engineering group determined that this change fixed the torsion problem.
- The Architectural group produced a set of plans from AutoCAD for each story of the hotel including a ballroom, cafe, hotel suites and green roof. Using SAP2000, the Engineering group was able to find the service, axial, dead & live, loads on the individual members at each floor so a complete steel and foundation design could be performed while adhering to the relevant building code.
- The Engineering group also created construction plans to show the structural design of the building.
IPRO 315: Design of a Large Scale Structure

View of Lobby

View of Green Roof

Site Overview of Phantasy Hotel

SAP2000 Computer Modeling Result

View of a Hotel Suite

Torsion Forces

Moment Diagram

Axial Forces

Faculty Advisors

Dr. Jeffrey Budiman
Dr. Jay Shen
Mr. Jorge Cobo

Namrata Hegde
Michael Cullen
Oladipo Animashaun
Steve Kuo
Dawveed Scully
Yoojee Kim

Christopher Lee
Carmen Aguilar-Wedge
Yongdoo Lee

Shuaib Hadi
Yongdoo Lee
Shadi Yousef

Karol Rybaltowski
Alex Bauer