Revitalizing Architectural Engineering’s FYS through Core and Themed Modules


The Leonhard Center for the Enhancement of Engineering Education

Until now, current Penn State Architectural Engineering FYS were limited by:
- Outdated learning objectives
- Not showcasing the latest advancements in the field
- Lacks consistency among different course sections
- Not structured to be engaging
- Weak ties to University Req.

First Year Seminars can:
- Cultivate lifelong learning
- Increase in an individual’s desire to engage
- Broaden areas of interest

Course Redesign Basis

Aim: establish a new responsive, replicable, and theoretically-informed approach for our FYS offerings by:
1. Contribute to the mindset of launching careers of World Class Engineer stature;
2. Meet the goals put forth by the faculty senate for the FYS experience in preparing students for university study
3. Highlight architectural engineering career opportunities for future students
4. Provide a consistent way students are introduced to architectural engineering as a field
5. Develop a structured, yet customizable, learning modules can be developed and incorporated by AE faculty
6. Develop a set of curricular deployment and evaluation guidelines

For all sections, 3 component modules make up the course. Each accounts for 1/3rd (5 weeks) of the semester.

Core Areas

Building Technical Content
- What is AE and the Discipline Options
- AE in Practice: Fallingwater Tour
- East Halls Lecture and Site Tour
- Building Campus Scavenger Hunt
- Interdisciplinary Integration (AEI Team Video)

Building Professionals Content
- Professional Presence: In-person and Online
- Job Fair Navigation
- University Study Habits and Goal Settings
- AE Dept. Study Habits and Curriculum
- Ethics and Professional Licensure

Current Piloted Themes

Sect. 001: Stadiums of the Future: Imagining Beaver Stadium
Sect. 002: Robots Building Buildings: Automating Construction
Sect. 003: Additive Construction: 3D Printed Buildings
Sect. 004: Greatest Building Failures of All Times
Sect. 005: Engineering Cities: Lego City Penn State

Theme Format Requirements
- Must have team activities but could also have individual activities.
- Must do hands-on exercises.
- These can be the physical or virtual.
- Easy to complete in 4 weeks with 1 week for presentations.
- Must be related to AE.

Reference Areas

- Created to be in sequence or mixed within the 15 weeks.
- Self-contained for future faculty deployment beyond current instructors.

Active Strategies
- Increase faculty and peer interactions
- Real career examples
- Hands-on building experiences
- Team activities

Theme Lecture Breakdown Requirements
- 2 periods on the theme and team building.
- 1 period for brainstorming of ideas and initial feedback.
- 1 period for active building/hands-on activities.
- 1 period for presentation and judging with reflection.

Acknowledgments
The authors would like to thank the Leonhard Center Team for their support and guidance on this project. Also to the students for being supportive of this project.

References
- Iverson and Colky (2004), Kolb (1984),
- Porter and Swing (2006), Padgett et al. (2013)