

# Revitalizing Architectural Engineering's FYS through Core and Themed Modules

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The Leonhard Center for the Enhancement of Engineering Education



ARCHITECTURAL ENGINEERING

## First Year Seminars can:

- Cultivate lifelong learning
- Increase in an individual's desire to engage
- Broaden areas of interest

## Core Areas

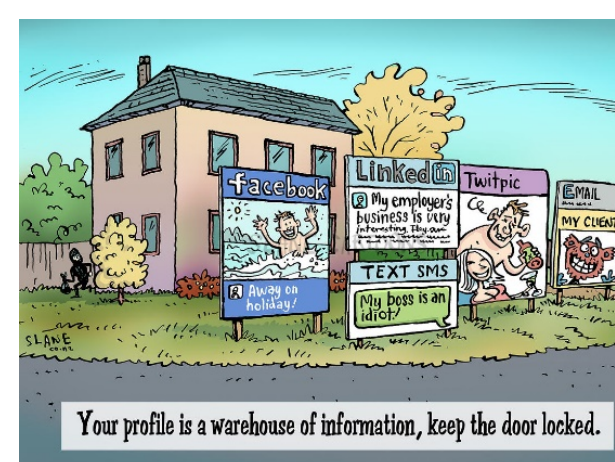
### Building Technical Content

- 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



#### The 5-year Degree Program

Yr. 1	General Engineering	Declare ENGAE
Yr. 2	Basics of AE   Architecture	Declare Major
Yr. 3	Introduction to All Options	Declare Option
Yr. 4	Option Specific Focus   Architecture	At University
Yr. 5	Option Specific Focus   Capstone	Peer Computer Only

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**Objective:**  
 To obtain a full-time position at a structural engineering firm where I can contribute to company operations while gaining experience that will further my career as a licensed professional engineer.

**Education:**  
 Penn State University  
 Bachelor of Architectural Engineering - Structural Option  
 Fall and professional degree - AIAE completed  
 GPA 3.2 Junior/Senior GPA 3.4  
 CEI status upon graduation in May 2010

**San Diego Community College**  
 Worked as a teaching assistant in two technical drawing classes  
 San Diego, CA  
 Summer 2006

**Experience:**  
 W&A, Janney, Elstner Associates, Inc.  
 • Assisted in analysis and review of existing structures.  
 • Worked under drawing team and under supervision including water and bulk heating.  
 Lakewood, CO  
 Summer 2009

**Summer Intern & Mentor Association**  
 • Utilized and edited CAD drawings  
 • Member engineering working structures.  
 Boston, MA  
 Summer 2007

**Honors & Organizations:**  
 Student Society of Architecture Engineers - Vice President, 2009  
 Structural Society of Civil Engineers  
 Dick Tarrant Memorial Scholarship, 2009

**Skills:**  
 AutoCAD 2010 ETABS/SAP Revit RAM Microsoft Office  
 Adobe Photoshop Dreamweaver Google SketchUp Spanish

References and portfolio available upon request.

## Until now, current Penn State Architectural Engineering FYS were limited by:

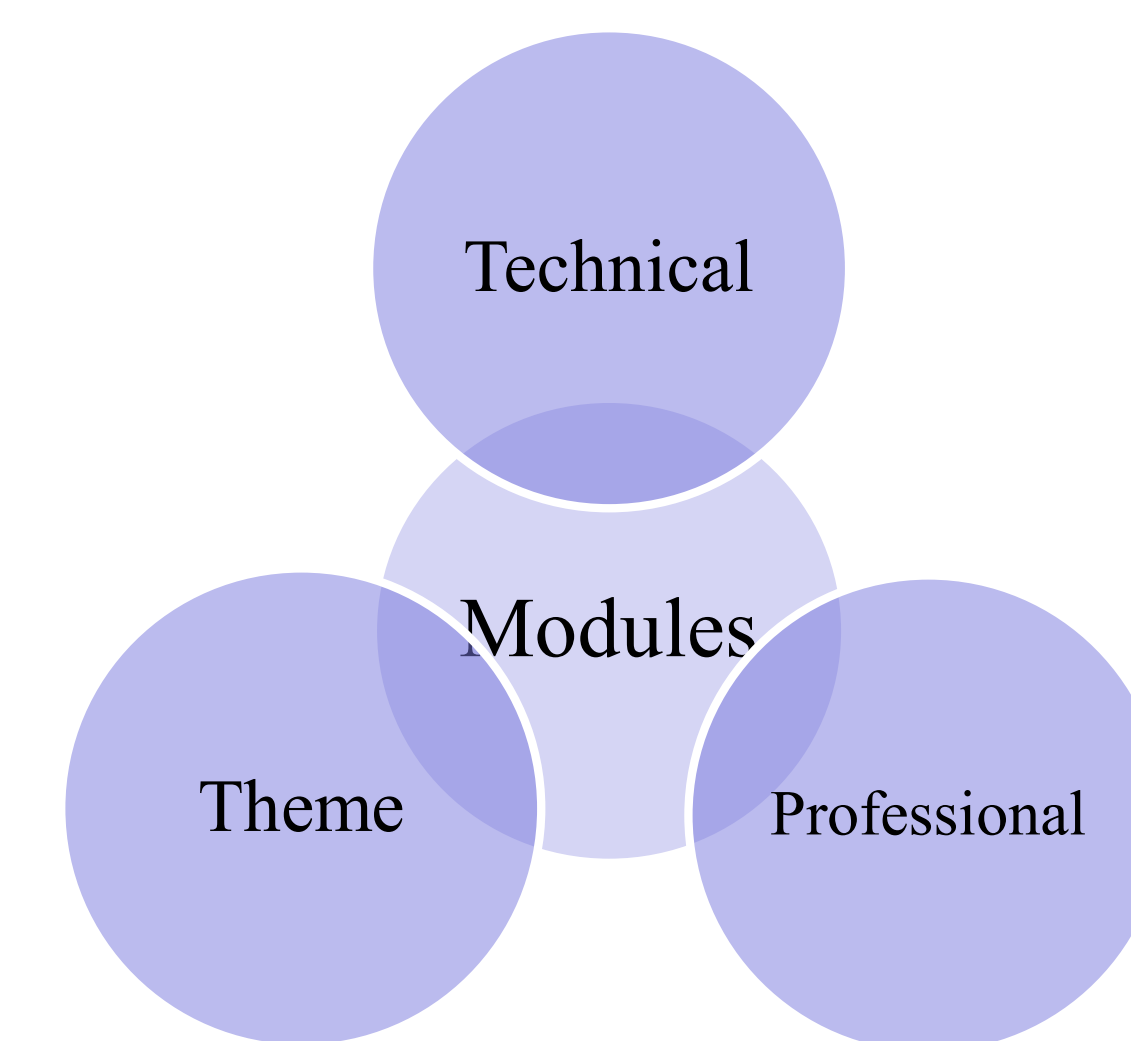
- Outdated learning objectives
- Not showcasing the latest advancements in the field
- Lacks consistency among different course sections
- Not structured to be engaging
- Weak ties to University Req.

## 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.

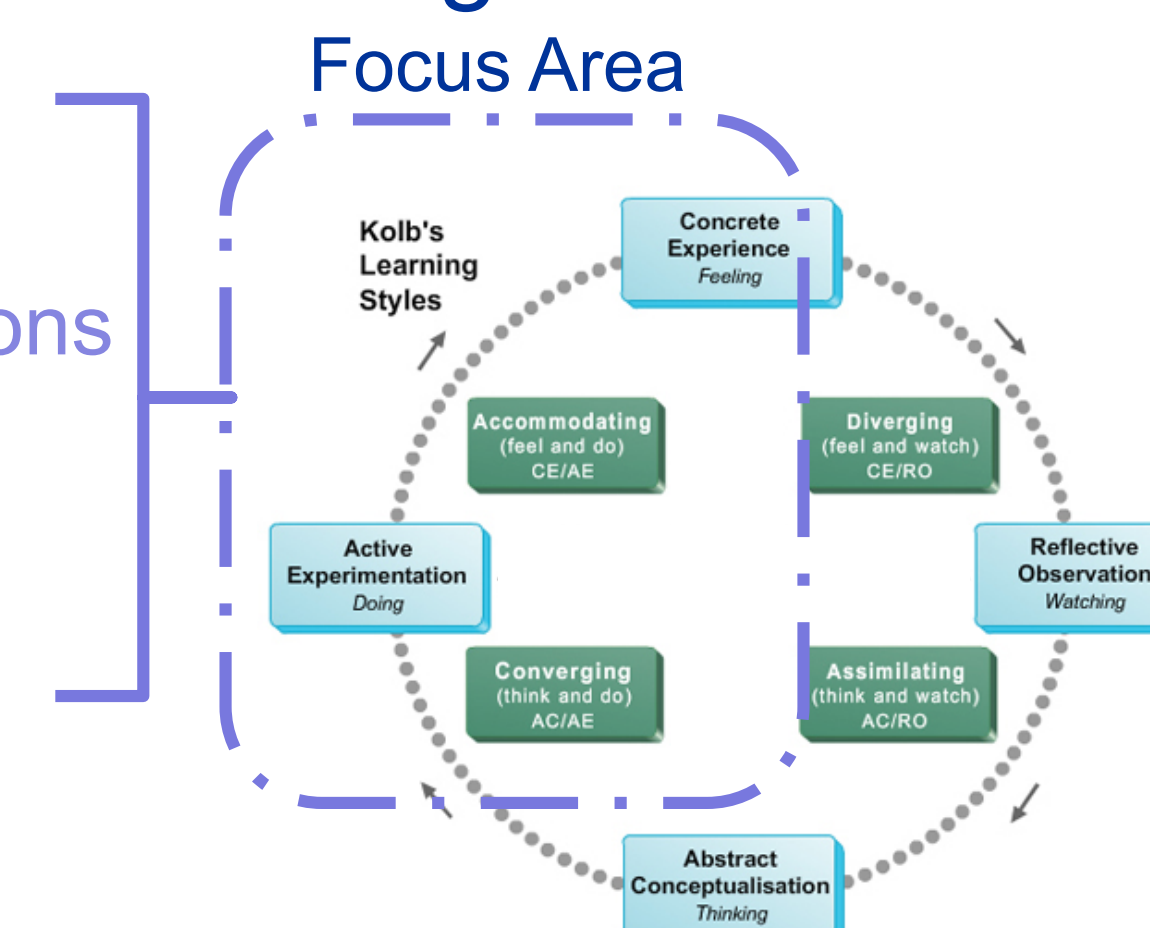


- Created to be in sequence or mixed within the 15 weeks.
- Self-contained for future faculty deployment beyond current instructors.

## All modules go beyond in-class lecturing.

### Active Strategies

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



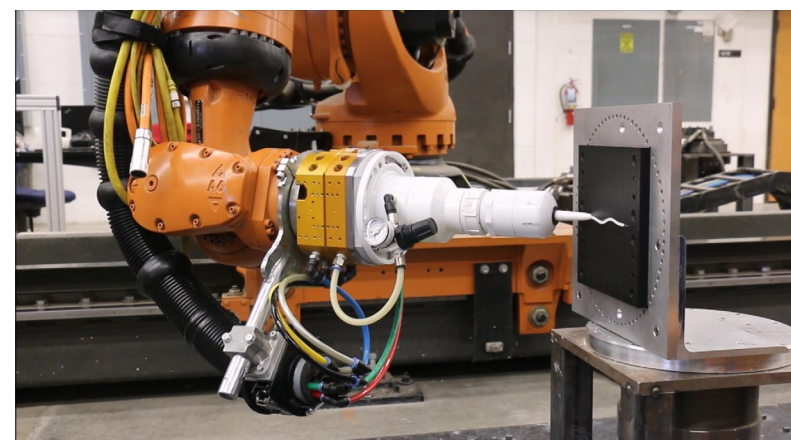
## Themes

### 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.

### 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.

### References

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

## Acknowledgments

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