

How is Architectural Engineering (AE) Design taught in the US, and what are the issues related to teaching it?

This longish introduction attempts to give an overview of how and why this survey exists. You're welcome to dive right in by going to the next page, but here's a summary of some key points.

- Who - James Mitchell - read about me at on my [sabbatical blog](#)
- Why - To understand how AE Design is taught and what are the issues.
- Time to Take - 15 minutes or longer depending on much you decide to write - probably 30 minutes average
- Can you return to edit or add - yes, but you'll need to be on the same computer and enable "cookies"
- Anonymous entry - yes you may be anonymous if you wish
- Required Answers - All are optional except for the intial four.
- Comments Welcome - I expect that many of the most interesting results will come from the comments.

Interview and Survey Plan

I'll be visiting as many of the AE schools as possible during AY2008-2009. These are the questions that I hope to address with individual faculty members and groups during that visit. In many cases I expect that the interview will essentially just fill out this form, obviating the need for individuals to complete a lengthy online survey.

- For those who do choose to complete it in advance we'll be able to spend more time discussing particular issues that are important to you.
- The web format is also an opportunity for you to provide input (anonymously if you wish) if you are unable to meet me when I visit, or just want to provide input without the bother of an interview.

Time To Complete the Survey

If all you do is check boxes and provide short comments to about 1/2 the questions this survey should take about 30 minutes. I hope that you'll be inspired to provide comments that may take a while to think through.

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Note that you can return to modify or add to your answers so long as you use the same computer and allow "cookies".

Sabbatical Blog

You may read about the development and progress of the study on my blog: <http://aedesigndu.blogspot.com/>

In that blog I'll provide links to any reports or papers that arise from the study. You'll also be automatically taken to that blog when you complete the survey.

Note that I've used the acronyms AED and TAED to represent "Architectural Engineering Design" and "Teaching Architectural Engineering Design" on occasion.

Question Groups

The questions are arranged in the following overall groups

1. Introduction - This page
2. About You
3. What is AE Design?
4. Courses in which AE Design is taught
5. Evaluation of the quantity of AED Course Offerings
6. Methods used to teach AE Design
7. Current Issues
8. Research needs for teaching AE Design
9. AE School Cooperation
10. Suggested changes for teaching AE Design
11. Accreditation Requirements
12. Final Thoughts

Anonymity if you wish

You do NOT need to provide your name. If you don't you'll be anonymous and I'll remove anything that might identify an individual in anything that is published. I ask for your name so that if you complete the questionnaire before I visit I will have it available during the visit to avoid repeating questions you've already answered. I might also follow up for clarification or amplification if you express a willingness for further contact.

Confidentiality of the Data

I will maintain any data containing identifiable information

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2. About You

Information about you.

Note that you do NOT need to provide your name or EMail. Providing it will make it easier to discuss your opinions when I visit.

In any case, what you say will remain anonymous and any identifying information will be removed from published results.

In this entire survey only the first four questions on this page (*) that identify the type of person are required. All others are optional, though we hope you'll answer all that are appropriate.

* 1. Your University

Cal Poly San Luis Obispo

Oklahoma State University

Missouri University of Science and Technology

Drexel University

Penn State University

University of Nebraska - Lincoln

Illinois Institute of Technology

Tennessee State

University of Oklahoma

Kansas State

University of Colorado

University of Texas

Milwaukee School of Engineering

University of Kansas

University of Wyoming

North Carolina A&T State College

University of Miami

Other (please specify)

* 2. Disciplines that your department includes (check all that apply):

Architectural Engineering

Architecture

Civil Engineering

Environmental Engineering

Other (please specify)

* 3. Your Academic Rank

Professor

Assoc. Professor

Assistant Professor

Instructor

Adjunct

Other (please specify)

* 4. Your primary discipline

AE

Architecture

Structures

HVAC

Electrical Power

Lighting

Environmental

Construction Management

Other (please specify) or comment

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5. How much experience do you have related to teaching AE Design?
(Please enter only in a single integer for each. You can comment in the box.)

Years of Teaching Experience

Years of industry experience

Years of teaching AE Design in some form

6. Professional Registration (check all that apply):

Yes

PE

RA

Other (please specify)

7. Your Name and EMail - OPTIONAL

First Name

Last Name

EEmail

3. What is AE Design?

If we're going to talk about teaching Architectural Engineering Design (AED) we need to understand what each of us means by that phrase.

Please feel free to write as much as you want in any comment box on all the pages.

1. What is your definition of Architectural Engineering Design?

2. Is your school's definition of AED the same as yours?

Yes

No

Your school's definition, if different.

3. Is the national definition of AED the same as yours?

Yes

No

National definition of AED, if different.

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4. Which of the following disciplines must be included in a course for the course to be considered as addressing AE Design - (Select all that apply)?

Must Include

Architecture	<input type="checkbox"/>
Structure	<input type="checkbox"/>
HVAC	<input type="checkbox"/>
Electrical	<input type="checkbox"/>
Construction Management	<input type="checkbox"/>
Any two of the above	<input type="checkbox"/>
Any three of the above	<input type="checkbox"/>
All of the above	<input type="checkbox"/>

5. Your comments on the issue of defining AE Design:



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4. Courses in which AE Design is taught

In what courses are there major AED components, either offered by your department or others?

If you are time-limited feel free to skip this page. In my analysis my default assumption is that I'll use all the courses in the curriculum that have "design" in the title or description. Taking the time to give me more specific information here will refine what I include and how I analyze it.

Note-1: it's OK to combine course sequences into a single entry (e.g. CAEE-490,491,492) or put them in separate entries.

1. Course-1 Information

ID/Rubric	<input type="text"/>
Name	<input type="text"/>
Department	<input type="text"/>
AED Content	<input type="text"/>
Comment	<input type="text"/>

2. Course-1 teaching section size

Average section size (integers only):

3. Course-1 The primary emphasis of this course is:

AED Arch. Structure HVAC Electrical CM Other

Comment

4. Course-2 Information

ID/Rubric	<input type="text"/>
Name	<input type="text"/>
Department	<input type="text"/>
AED Content	<input type="text"/>
Comment	<input type="text"/>

5. Course-2 teaching section size

Average section size (integers only):

6. Course-2 The primary emphasis of this course is:

AED Arch. Structure HVAC Electrical CM Other

Comment

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7. Course-3 Information

ID/Rubric	<input type="text"/>
Name	<input type="text"/>
Department	<input type="text"/>
AED Content	<input type="text"/>
Comment	<input type="text"/>

8. Course-3 teaching section size

Average section size (integers only):

9. Course-3 The primary emphasis of this course is:

AED Arch. Structure HVAC Electrical CM Other

Comment

10. Course-4 Information

ID/Rubric	<input type="text"/>
Name	<input type="text"/>
Department	<input type="text"/>
AED Content	<input type="text"/>
Comment	<input type="text"/>

11. Course-4 teaching section size

Average section size (integers only):

12. Course-4 The primary emphasis of this course is:

AED Arch. Structure HVAC Electrical CM Other

Comment

13. Course-5 Information

ID/Rubric	<input type="text"/>
Name	<input type="text"/>
Department	<input type="text"/>
AED Content	<input type="text"/>
Comment	<input type="text"/>

14. Course-5 teaching section size

Average section size (integers only):

15. Course-5 The primary emphasis of this course is:

AED Arch. Structure HVAC Electrical CM Other

Comment

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16. Course-6 Information

ID/Rubric	<input type="text"/>
Name	<input type="text"/>
Department	<input type="text"/>
AED Content	<input type="text"/>
Comment	<input type="text"/>

17. Course-6 teaching section size

Average section size (integers only):

18. Course-6 The primary emphasis of this course is:

AED Arch. Structure HVAC Electrical CM Other

Comment

19. If more courses have AED content please feel free to put in the same information in this general comment box.

20. General Comments on Courses with AED content.

5. Evaluation of the quantity of AED Course Offerings

Your evaluation of the current inclusion of AE Design in the curriculum.

1. What is the need to alter the number of courses offering AE Design content?

	Reduce greatly	Reduce	Keep	Increase	Increase greatly
Explicit AED courses	jñ	jñ	jñ	jñ	jñ
Courses with AED content	jñ	jñ	jñ	jñ	jñ

Comment

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6. Methods used to teach AE Design

Please give us your use of the following methods of teaching AED.

If you're uncertain about what these methods are, here's a [link to a post](#) with definitions for each.

1. I use the following approaches in teaching AE Design.

	Never	Occasional	Sometimes	Often	Always
Lecture	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Architectural Studio	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Modified Studio	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Case Study	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Problem-Based Learning	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Guided Design	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Socratic	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Comment

2. The number of students (integers only) in a teaching section appropriate for that approach to teaching AE Design is:

Lecture	<input type="text"/>
Architectural Studio	<input type="text"/>
Modified Studio	<input type="text"/>
Case Study	<input type="text"/>
Problem-Based Learning	<input type="text"/>
Guided Design	<input type="text"/>
Socratic	<input type="text"/>
Other	<input type="text"/>

3. Comment on class size appropriate to each method:

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4. I use student teamwork in teaching AE Design.

	Never	Occasional	Sometimes	Often	Always
Lecture	jñ	jñ	jñ	jñ	jñ
Architectural Studio	jñ	jñ	jñ	jñ	jñ
Modified Studio	jñ	jñ	jñ	jñ	jñ
Case Study	jñ	jñ	jñ	jñ	jñ
Problem-Based Learning	jñ	jñ	jñ	jñ	jñ
Guided Design	jñ	jñ	jñ	jñ	jñ
Socratic	jñ	jñ	jñ	jñ	jñ
Other	jñ	jñ	jñ	jñ	jñ

Comment

5. I would advocate changing the way the school teaches AED by changing the use of the following techniques

	Eliminate	Reduce	Keep	Increase	Always
Lecture	jñ	jñ	jñ	jñ	jñ
Architectural Studio	jñ	jñ	jñ	jñ	jñ
Modified Studio	jñ	jñ	jñ	jñ	jñ
Case Study	jñ	jñ	jñ	jñ	jñ
Problem-Based Learning	jñ	jñ	jñ	jñ	jñ
Guided Design	jñ	jñ	jñ	jñ	jñ
Socratic	jñ	jñ	jñ	jñ	jñ
Other	jñ	jñ	jñ	jñ	jñ

Comment

7. Current Issues

What are current unresolved issues related to teaching AED for your school?

1. Evaluate the importance of the following issues to your school:

	None	Low	Average	High	Critical
BIM	jn	jn	jn	jn	jn
Integration of all ABET components of AE - Structure; HVAC; Electrical/Power/Lighting; Construction Management	jn	jn	jn	jn	jn
Student Preparation on Entering program	jn	jn	jn	jn	jn
Sustainability Design	jn	jn	jn	jn	jn
Lean / economic design	jn	jn	jn	jn	jn
Bachelor's + 30 (Masters as first professional degree)	jn	jn	jn	jn	jn
Coordination with other departments	jn	jn	jn	jn	jn
Other (please identify)	jn	jn	jn	jn	jn

Comment

2. Evaluate the importance of the following issues to AE programs nationally.

	None	Low	Average	High	Critical
BIM	jn	jn	jn	jn	jn
Integration of all three ABET components of AE - Structure; MEP; Construction Management	jn	jn	jn	jn	jn
Student Preparation on Entering program	jn	jn	jn	jn	jn
Sustainability Design	jn	jn	jn	jn	jn
Lean / economic design	jn	jn	jn	jn	jn
Masters as first professional degree	jn	jn	jn	jn	jn
Coordination with other departments	jn	jn	jn	jn	jn
Other (please identify)	jn	jn	jn	jn	jn

Comment

3. General comment or suggestion on issues related to AE Design

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8. Research needs for teaching AE Design

Below are several possible areas in which there might be research focused on the education process. What is your opinion of the importance of each?

1. Evaluate the importance of research related to teaching AE Design in the following areas:

	None	Low	Average	High	Critical
Identifying the most effective teaching strategies for different aspects of AED.	jn	jn	jn	jn	jn
Correlating industry needs with AED curricula	jn	jn	jn	jn	jn
Incorporating computer-based instruction into the curriculum	jn	jn	jn	jn	jn
Incorporating distance-learning into the curriculum	jn	jn	jn	jn	jn
Addressing different student learning styles	jn	jn	jn	jn	jn
Other (please identify)	jn	jn	jn	jn	jn

Comment

9. AE School Cooperation

How important is it to develop cooperation and coordination between the different AE Schools in the US (or abroad)?

1. Evaluate the importance of cooperation and coordination between the different AE Schools in the US (or abroad).

	None	Low	Average	High	Critical
ABET Criteria Development	jn	jn	jn	jn	jn
PE Exam Development	jn	jn	jn	jn	jn
Sharing instructional techniques	jn	jn	jn	jn	jn
Remote access to specialist instructors (e.g. Acoustics, elevators)	jn	jn	jn	jn	jn
Joint projects with other schools	jn	jn	jn	jn	jn
Other	jn	jn	jn	jn	jn

Comment

10. Suggested changes for teaching AE Design

What changes would you like to see in how AE Design is taught?

1. What do you do currently that you see as most successful that other instructors or schools might adopt?

2. In what areas of teaching AED do you most want to see innovations or changes?

3. What things do you think you might learn from other schools that would help you?

11. Accreditation Requirements

What should be the accreditation requirements related to teaching AE design?

1. Evaluate the importance of possible changes in the ABET accreditation requirements.

	None	Low	Average	High	Critical
Require "integration" of at least two of the three AE components.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Require industry experience for faculty members teaching AE Design.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Identify a specific number of credits identifiable as AED	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Require AE design components in each year after freshman	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Comment

12. Final Thoughts

Here's your opportunity to provide final thoughts both about the subject of Teaching Architectural Engineering Design and also about the questionnaire itself.

1. The Content

Your final thoughts about Teaching Architectural Engineering Design.



2. The Questionnaire

Your thoughts about the questionnaire itself and the approach taken.

