

## Architectural Engineering Ph.D. Qualifying Examination

This document describes the process and content of the Architectural Engineering (AE) Qualifying Examination. All AE Ph.D. students are required to take, and pass, the AE Qualifying Examination before the appointment of the Doctoral Degree Supervisory Committee. Students matriculating with a M.S./M.A.E. degree must take the Qualifying Exam by the beginning of their second year in the Ph.D. program, while students matriculating with only a B.S. degree must take the Qualifying Exam by the beginning of their third year in the Ph.D. program.

The AE Qualifying Exam consists of one 4-hour long exam in a specific area of study within architectural engineering. The areas that are currently offered include:

- Acoustics
- Electrical
- Lighting
- Mechanical
- Structures

The examination is open-book and open-note. Calculators are permitted. No smartphones, tablets, laptops or any other device that can be connected to the Internet, are allowed in the examination room.

A score of at least 70% is required to pass the Ph.D. Qualifying Examination. Students who score less than 70%, but more than 60%, are required to take and pass a supplementary oral examination. Those who do not pass the oral examination will be offered a second opportunity to take the Qualifying Examination within one calendar year. Students who do not pass the Qualifying Examination the second time will not be able to continue their program of graduate studies. Students scoring less than 60% will have failed the exam. Students who fail will be offered a second opportunity to sit the exam within one calendar year, and must pass the exam in order to continue their graduate studies. Topics under each area of concentration in the test covering the selected major area are as follows:

### **Acoustics:**

Fundamentals (AE 3300, MECH 816):	40% of total
Architectural Acoustics (AE 8330):	30% of total
Noise Control (AE 8300):	30% of total

### **Electrical:**

Fundamentals (ELEC 2110):	60% of total
Building Electrical Systems I (AE 3220):	20% of total
Building Electrical Systems II (AE 8220):	20% of total

### **Lighting:**

Fundamentals (AE 3200, AE 4200):	50% of total
Lighting Design Principles (AE 3200, AE 4020, AE 4200):	20% of total
Calculations and Analysis (AE 3200, AE 4200, AE 4020, AE 8250):	30% of total

**Mechanical:** *Students must declare their FOUR selected topics prior their registrations of the Qualifying Exam. They should attempt all problems for a total of 100 points. Each topic worth 25 points as listed below:*

Thermodynamics (MENG 200):	25 points
Fluid Dynamics (CIVE 310):	25 points
Heat Transfer: (MENG 420):	25 points
HVAC (AE 3100, AE 4120, AE 8140):	25 points
Indoor Air Quality (AE 8116):	25 points
Controls (AE 8120):	25 points

### **Structures:**

Fundamentals (Statics, Mech. of Materials, Structural Anal.)	40% of total
Structural Design (Concrete I, Steel I, Foundations)	30% of total
Advanced Structures topics (Masonry Design, Concrete II, Steel II)	30% of total

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