



**Senior Thesis Program**  
**The Department of Architectural Engineering**  
**The Pennsylvania State University**  
**University Park, PA**

## **Course Syllabus**

**Architectural Engineering Senior Thesis Program**  
*An Engineering Capstone Design Course Sequence*

Consisting of

**AE 481W: *Comprehensive Senior Project***  
4 Credits; Writing Intensive Course

**AE 482: *Comprehensive Senior Project II***  
4 Credits

### **Introduction**

The course sequence of AE 481W and AE 482 comprise what is more commonly known as AE Senior Thesis. This year long capstone design project is one of the major highlights of the five year professional degree BAE program. It is required of all undergraduate students in the Department of Architectural Engineering at Penn State.

Senior Thesis consists of obtaining an outside sponsor who provides the student with an actual building that will be used as the model for a variety of technical and management tasks throughout the year. Based on the building or project model, students will investigate the project, perform technical analysis, develop project criteria and eventually prepare a written proposal for more advanced design work. This is followed up by a semester of intense effort to complete the goals of the proposal. A formal written final report is required as is a verbal presentation to a faculty jury.

A number of students, selected by the AE faculty from the first presentations, will represent their class and compete for numerous awards by presenting a second time. This second presentation will be to an invited jury of about 50 visiting practitioners from all over the country.

There is a wide variety of requirements in the AE Senior Thesis. The categories noted below represent the primary areas of student work and involvement.

- Project Management including general research and project investigation
- Formal written proposal development
- Management of individual records and student electronic portfolios (CPEP)
- Technical Work in the major discipline emphasis of each student
- Breadth Demonstration; out of option work on the project
- Professional Practice and Placement component
- Formal written final report
- Final verbal presentation to faculty jury

It is important to note that students are required to include work in their primary discipline area of AE as well as to demonstrate breadth capabilities in a minimum of two other architectural engineering disciplines or option areas. Often times the breadth topics are coordinated around a theme or are integrated with the depth topics proposed by the student.

### **Faculty Participation**

Professor M. Kevin Parfitt is the faculty director assigned by the AE department to manage the course and coordinate the work of the entire faculty. Virtually all full time tenured or tenured track faculty of the department are involved in some aspect of the course as discipline specific coordinators and/or consultants. Students will be assigned a primary faculty consultant in their discipline (option) area. Other consultants will be involved by formal assignment or by being available on an as needed basis to provide technical advice in specialty areas or for the AE breadth requirements.

### **Outside Practitioners and Consultants**

A number of outside practitioners from the AEC industry will be involved in the course. Their activities will vary but include serving as technical consultants and advisors, providing guest lectures on industry related and professional practice topics, and in some cases serving as “electronic” consultants, experts, and participants on the “e-studio” website and discussion boards. Some of these practitioners, those who participate both on campus and electronically in senior thesis, will have roles similar to a faculty member. All of the practitioners and their associated employers have volunteered their time to serve in a supporting role to make the thesis experience more realistic and valuable.

### **Meeting Times and Locations:**

- M W F 3:35 – 5:30 in 260 Willard Building (Fall Semester)
- M T W R F 3:35 – 5:30 in 162 Willard Building (Spring Semester)
- By appointment with consultants or special scheduling announcements in class
- Other locations will be announced in class for group meetings and visiting lectures.

Students are expected to attend all scheduled class meetings. In addition, students will be required to attend smaller group meetings related to option work and specific assignments. Most meetings with faculty consultants will be individually scheduled. Attendance at guest lectures is expected. Guest lectures will be provided both for the entire class and on a per option basis.

### **Assignments and Minimum Requirements:**

A detailed listing of assignments and their weighting relative to grades are provided on the e-Studio site or as part of the individual consultant group handouts. Some general work and assignments are considered minimum requirements to successfully pass AE 481 and/or AE 482. A listing of minimum requirements includes the following:

- Final Thesis Proposal approved by the faculty (Required to pass AE 481W)
- Submission of Final Report (depth and breadth included)
- Final Verbal Presentation to Faculty Jury
- Project Management Submissions (as outlined on course schedule)
- CPEP Submissions, periodic updates and maintenance
- Class Attendance
- Meetings with Faculty Consultants & Participation in on-line discussion board with Practitioner mentors and experts

### **Assignment Resubmission Policy**

Any assignment or work item designated as a minimum course requirement must be repeated until it is accepted by the faculty or course director. Individual graded assignments and reports, such as those in your discipline area, may be resubmitted under very specific guidelines and conditions. See the e-Studio site at <http://www.arche.psu.edu/thesis/> for the Grading and Assignment Resubmission Policy for specific details and requirements on this topic.