

### 3.13 student performance criteria

The curriculum of the Department of Architecture seeks to prepare our students for the profession of architecture by balancing coursework requiring focused technical accomplishment in concert with a general education in the arts and humanities. The curriculum is designed to enable our students to make the short-term transition to relevant architectural practice and support long-term development in the ever-broadening profession of architecture and allied fields. The ten-semester design studio experience is central to our whole program, and forms the locus of the integration of practical and theoretical curricular content. The objectives of professional architectural education and training at Penn State are:

- To develop our students' core understanding of architectural design through the integration of architectural theory and history with technical competence in the building sciences.
- To enable our students to build upon their core design knowledge through self-directed research and design focused elective coursework, and future graduate studies.
- To challenge our students to become ethical and creative professionals in the practice of architecture and related design fields.
- To introduce our students to international urbanism and global architectural practice by providing study abroad opportunities.
- To prepare our students with critical thinking and problem-solving skills that will endure the rapidly changing role of the architect in the future.

In addition to these overall goals, it is very important to us that we accomplish the Student Performance Criteria set forth by NAAB. The following is an account of how each criteria is addressed in our curriculum:

Please note the color coding denotes the following:

first year course\*

second year course\*

third year course\*

fourth year course\*

fifth year course\*

\* following recommended sequence

## **1 Speaking and Writing Skills**

The format of the design critique employed throughout the studio sequence introduces and hones the student's ability to speak AND listen effectively. Architecture students become well versed in public speaking and in listening and responding to the comments and criticisms of the jury. Students are required to take a series of general education requirements that thoroughly cover reading, writing, listening and speaking effectively (ENGL 015, CAS 100 and ENGL 202). ARCH 311w is a writing intensive theory seminar that requires the students to participate using these skills in direct relation to architectural content. During the thesis year and final presentations, students fulfill this criteria in various ways including: thesis books documenting the site, research, precedents, program, design, etc. and design/ research presentations which culminate with a panel of prestigious external jurors who review both the thesis books and design presentations.

Primary Coursework Evidence:

**ARCH 311w**    **Architectural and Planning Theories**  
**CAS 100**      **Effective Speech**

Additional Coursework Evidence:

ARCH 491      Architectural Design VII - Thesis  
ARCH 492      Architectural Design VIII - Thesis  
ENGL 015      Rhetoric and Composition  
ENGL 202      Effective Writing

## **2 Critical Thinking Skills**

Both the design process and formal critique method are based upon the ability to think and act critically. Much of this process is not typically well documented in the end products of the design project. The architectural theory sequence begins with two introductory theory courses (ARCH 210 and ARCH 211) in which students are exposed to the sweeping history of architectural theory establishing a historical foundation of architectural critical decision making from Vitruvius to contemporary architecture. Within ARCH 311w, students are presented with historic and contemporary theorists and are encouraged to develop their own critical approach to conceptualizing architecture. The courses in Rome, especially ARCH 499B and ARCH 499C, present the changing attitudes toward the built environment in Rome over centuries of change involving politics, religion, economic, and health related population fluctuations. Finally, in ARCH 491 and 492, the thesis student crafts their own project, program and critical approach to architectural design and, in some cases, urban or regional planning issues. Students tend to choose highly controversial thesis projects to push themselves and the general discourse to direct attention to the issues of today's architectural discourse.

Primary Coursework Evidence:

## **ARCH 311w Architectural and Planning Theories**

### Additional Coursework Evidence:

|           |  |
|-----------|--|
| ARCH 121  | Visual Communications                    |
| ARCH 197s | Basic Design Studio I                    |
| ARCH 197B | Basic Design Studio II                   |
| ARCH 210  | Contemp. Design and Planning Theories I  |
| ARCH 211  | Contemp. Design and Planning Theories II |
| ARCH 231  | Architectural Design I                   |
| ARCH 232  | Architectural Design II                  |
| ARCH 331  | Architectural Design III                 |
| ARCH 332  | Architectural Design IV                  |
| ARCH 431  | Architectural Design V                   |
| ARCH 432  | Architectural Design V                   |
| ARCH 499A | Architectural Design VI [Rome]           |
| ARCH 499B | Architectural Analysis [Rome]            |
| ARCH 499C | Urban Studies Topics [Rome]              |
| ARCH 491  | Architectural Design VII - Thesis        |
| ARCH 492  | Architectural Design VIII - Thesis       |

## **3 Graphic Skills**

Every design studio develops a student's ability to represent architectural designs in various media. The course dedicated to laying the foundation of this sequence is ARCH 121: Visual Communications. This course is linked to the fall schedule and projects explored in ARCH 197s (formerly A&A 102s, ARCH 197bs, and ARCH 131s). In ARCH 121, students develop orthographic drafting, sketching, perspective, collage, photography, and model making. ARCH 197B demands careful attention to the connection between drawing, model making, design development, and the built work with a design-build project. ARCH 231 and ARCH 232 provide the student with computer design and representation skills incorporated into the studio work. In ARCH 331 and ARCH 332, digital design and fabrication is presented and employed. The scale and scope jumps with ARCH 431, ARCH 432 and ARCH 499A to urban planning. Finally, the students must graphically represent a year long thesis project succinctly to an outside jury in ARCH 491 and ARCH 492.

### Primary Coursework Evidence:

|                 |   |
|-----------------|---|
| <b>ARCH 121</b> | <b>Visual Communications</b>              |
| <b>ARCH 492</b> | <b>Architectural Design VIII - Thesis</b> |

### Additional Coursework Evidence:

|           |                          |
|-----------|--------------------------|
| ARCH 197S | Basic Design Studio I    |
| ARCH 197B | Basic Design Studio II   |
| ARCH 231  | Architectural Design I   |
| ARCH 232  | Architectural Design II  |
| ARCH 331  | Architectural Design III |

|           |                                   |
|-----------|-----------------------------------|
| ARCH 332  | Architectural Design IV           |
| ARCH 431  | Architectural Design V            |
| ARCH 432  | Architectural Design V            |
| ARCH 491  | Architectural Design VII - Thesis |
| ARCH 499A | Architectural Design VI [Rome]    |

#### 4 Research Skills

In both the Theory (ARCH 210, 211, and 311W) and Art History (ARTH 201 and 202) sequences, students are required to conduct research projects. Design studios require, to a greater or lesser degree, research and incorporation of relevant precedent studies. As listed in Criteria 11, ARCH 121 introduces first year students to architectural precedent research in an analysis project. ARCH 331, 431 and 432 produce booklets documenting the research performed during the pre-design phase. The three courses in Rome (ARCH 499A, B and C) are designed to effectively introduce and incorporate research on the history of urban form and the city of Rome. As the capstone course in this performance criteria category, student produce a thesis book documenting a year of thesis research and design (ARCH 491 and 492).

Primary Coursework Evidence:

**ARCH 311W Architectural and Planning Theories**  
**ARCH 492 Architectural Design VIII - Thesis**

Additional Coursework Evidence:

|           |  |
|-----------|--|
| ARCH 121  | Visual Communications                    |
| ARCH 210  | Contemp. Design and Planning Theories I  |
| ARCH 211  | Contemp. Design and Planning Theories II |
| ARTH 201  | Ancient to Medieval Architecture         |
| ARTH 202  | Renaissance to Modern Architecture       |
| ARCH 331  | Architectural Design III                 |
| ARCH 431  | Architectural Design V                   |
| ARCH 432  | Architectural Design V                   |
| ARCH 491  | Architectural Design VII - Thesis        |
| ARCH 499A | Architectural Design VI [Rome]           |

#### 5 Formal Ordering Systems

Ordering principles of design are introduced to students in the first year in ARCH 121: Visual Communications through introductory exercises in drawing, model making, and analysis of architectural precedent. In the fourth year (ARCH 431, 432, 499A, 499B and 499C), the Urban Design year, formal ordering systems are understood on many levels including the formal implications of existing patterns and form generating attitudes towards those contexts including: cultural, physical, economic, personal, political, and organizational (bureaucratic).

Primary Coursework Evidence:

**ARCH 431      Architectural Design V**  
**ARCH 432      Architectural Design V**

Additional Coursework Evidence:

ARCH 121      Visual Communications  
ARCH 499A     Architectural Design VI [Rome]  
ARCH 499B     Architectural Analysis [Rome]  
ARCH 499C     Urban Studies Topics [Rome]

## **6      Fundamental Design Skills**

First year students begin to design with small scale interventions to build skills leading to a design-build project in the spring semester (ARCH 197s to ARCH 197B). Second year studio (ARCH 231 and 232) introduces students to the complexity of the architectural whole exploring program, site, context, circulation, accessibility, facade design, materiality and sustainability. Projects have real-world sites and explore the fundamentals of the aforementioned concepts.

Primary Coursework Evidence:

**ARCH 232      Architectural Design II**

Additional Coursework Evidence:

ARCH 197S     Basic Design Studio I  
ARCH 197B     Basic Design Studio II  
ARCH 231      Architectural Design I

## **7      Collaborative Skills**

Students are asked to work in teams at various points throughout the curriculum. The Bowers Program Funds and the Hamer Center have supported several interdisciplinary projects among architecture, architectural engineering and landscape architecture students (American Indian Housing Initiative, Rebuilding After Katrina, Solar Decathlon). With the first year design-build project (ARCH 197B), students work in teams to accomplish the design and construction of a small scale project. There are several collaborative projects in ARCH 203 and 204 including “Sketching with Wood,” documentation and masonry exercises. Students in ARCH 431 and 432 work in teams to accomplish an exhaustive pre-design research phase. ARCH 451 requires students to work in groups to prepare and present research papers.

Primary Coursework Evidence:

**ARCH 431      Architectural Design V**  
**ARCH 432      Architectural Design V**  
**ARCH 451      Architectural Professional Practice**

Additional Coursework Evidence:

ARCH 197B     Basic Design Studio II  
ARCH 203      Materials and Building Construction I  
ARCH 204      Materials and Building Construction II

## 8 Western Traditions

ARTH 201 covers Western European architectural history from circa 3000 B.C. to circa 1400 A.D. ARTH 202 continues to the present including the Renaissance, Baroque, Rococo, Romantic, Victorian, Modern, Post Modern and Contemporary periods. In ARCH 210, 211 and 311W, students will acquire a basic familiarity with important ideas, authors and texts that have shaped Western architecture. The Rome semester study abroad (ARCH 499A, B and C) deepens the historical and theoretical studies with intensive examination of one context, the city of Rome, its past and present in relation to cartography, architecture history, theory and design.

Primary Coursework Evidence:

**ARTH 201      Ancient to Medieval Architecture**  
**ARTH 202      Renaissance to Modern Architecture**

Additional Coursework Evidence:

ARCH 210      Contemp. Design and Planning Theories I  
ARCH 211      Contemp. Design and Planning Theories II  
ARCH 311w     Architectural and Planning Theories  
ARCH 499A     Architectural Design VI [Rome]  
ARCH 499B     Architectural Analysis [Rome]  
ARCH 499C     Urban Studies Topics [Rome]

## 9 Non-Western Traditions

Since the previous Team visit in 2005, a four-week course module was developed for ARCH 311W examining the relationships between changing architectural 'forms' and 'forms of thinking' in relation to the globally expanding South Asian world. In ARTH 201, students will study the Ancient Near East, Egypt, and Islamic architecture. Students enrolled after 2005 are required to take three credits of Architectural Supporting Course in Non-Western traditions. ARCH 497 seminars offerings include courses on South Asian Architecture and Theory of Modern Japanese Architecture.

Primary Coursework Evidence:

**ARCH 311w    Architectural and Planning Theories**

Additional Coursework Evidence:

ARTH 201      Ancient to Medieval Architecture  
ARCH 497      Architectural Support Courses

## 10 National and Regional Traditions

ARCH 203 and 204 introduce vernacular building materials and techniques and take students on

tours of local and regional architecture. While ARTH 202 includes examples of American Modern, Vernacular and Contemporary architecture, ARCH 211 explores the theoretical texts and manifestoes that shaped those traditions. In ARCH 311W contemporary theory is pursued in more depth than the initial introductory courses including national traditions and discourses.

Primary Coursework Evidence:

**ARTH 202      Renaissance to Modern Architecture**  
**ARCH 203      Materials and Building Construction I**  
**ARCH 204      Materials and Building Construction II**

Additional Coursework Evidence:

ARCH 211      Contemp. Design and Planning Theories II  
ARCH 311w     Architectural and Planning Theories

## **11      Use of Precedents**

Every design studio project involves the study of relevant architectural precedent. In later years, that precedent research is documented and presented in a research booklet. In ARCH 121, first year students are assigned historic precedents to analyze and represent. This type of research culminates in the thesis project and is represented in the thesis book (ARCH 491 and 492). In ARCH 431 and 432, students are required to create a pre-design booklet documenting their research and precedent analysis. In third year, ARCH 331, students produce their first research and design booklet including relevant architectural precedents.

Primary Coursework Evidence:

**ARCH 431      Architecture Design V**  
**ARCH 432      Architectural Design V**

Additional Coursework Evidence:

ARCH 121      Visual Communications  
ARCH 197B     Basic Design Studio II  
ARCH 231      Architectural Design I  
ARCH 232      Architectural Design II  
ARCH 331      Architectural Design III  
ARCH 332      Architectural Design IV  
ARCH 499A     Architectural Design VI [Rome]  
ARCH 491      Architectural Design VII - Thesis  
ARCH 492      Architectural Design VIII - Thesis

## **12      Human Behavior**

Architectural design studios from first through fifth year inherently explore the relationship between architecture and human behavior in every project. Fifth year studio projects (ARCH 491 and 492) invariably delve into the relationship between a particular user and architecture. More specifically, ARCH 210 and 211 introduce some of the ways in which theoretical writings have framed architecture's complex and changing relationship to human needs. ARTH 201 and 202

further compliment the introductory theory courses with contextual material on religious, political, philosophical, cultural, economical, gender, social, and technological information. Once again, the Rome courses (ARCH 499A B and C) focus on one context for human behavior in depth. ARCH 311W presents contemporary architectural and planning theoretical texts that have shaped how architectural discourse and design is influenced and adjusted according to the individual's and society's relationship to the physical environment.

Primary Coursework Evidence:

**ARCH 311w Architectural and Planning Theories**

Additional Coursework Evidence:

ARCH 210 Contemp. Design and Planning Theories I  
ARCH 211 Contemp. Design and Planning Theories II  
ARTH 201 Ancient to Medieval Architecture  
ARTH 202 Renaissance to Modern Architecture  
ARCH 499A Architectural Design VI [Rome]  
ARCH 499B Architectural Analysis [Rome]  
ARCH 499C Urban Studies Topics [Rome]  
ARCH 491 Architectural Design VII - Thesis  
ARCH 492 Architectural Design VIII - Thesis

### **13 Human Diversity**

Art History courses (ARTH 201 and 202) position the study of architecture within diverse cultures and time periods including contexts of religion, politics, philosophy, culture and society. In ARCH 231, projects introduce ADA requirements in a project tailored to users with special needs. ARCH 311W seeks to place the development of architectural forms and ideas within the larger historical framework of social and intellectual change. Integral to the pre-design process, ARCH 431 and 432 examines attitudes toward cultural, physical, economic. personal, and political contexts. In ARCH 451, students explore issues of minorities and women in architecture, diversity of architectural teams, and ADA compliance in group research and presentations. The topics are also addressed in lecture/presentations such as: Kevin Montgomery will present his experiences as a minority architect and students will watch Maya Lin's film describing her sensitivity to being an Asian woman architect.

Primary Coursework Evidence:

**ARCH 431 Architectural Design V**  
**ARCH 432 Architectural Design V**  
**ARCH 451 Architectural Professional Practice**

Additional Coursework Evidence:

ARTH 201 Ancient to Medieval Architecture  
ARTH 202 Renaissance to Modern Architecture  
ARCH 231 Architectural Design I  
ARCH 311w Architectural and Planning Theories

## 14 Accessibility

Every studio requires that the designs produced comply with ADA requirements. In particular, the second year studio (ARCH 232) explores a project with a user group that is physically challenged such as facilities for the Special Olympics. In third year studio (ARCH 331), students are required to complete accessibility diagrams for their projects. Working in tandem, ARCH 491, 492 and 451, students prepare accessibility diagrams for their thesis projects. Students also identify twelve local conditions of non-compliance, conduct field investigations and write reports in ARCH 451.

Primary Coursework Evidence:

|                 |  |
|-----------------|--|
| <b>ARCH 232</b> | <b>Architectural Design II</b>             |
| <b>ARCH 331</b> | <b>Architectural Design III</b>            |
| <b>ARCH 491</b> | <b>Architectural Design VII - Thesis</b>   |
| <b>ARCH 492</b> | <b>Architectural Design VIII - Thesis</b>  |
| <b>ARCH 451</b> | <b>Architectural Professional Practice</b> |

Additional Coursework Evidence:

|           |                                |
|-----------|--------------------------------|
| ARCH 197B | Basic Design Studio II         |
| ARCH 231  | Architectural Design I         |
| ARCH 332  | Architectural Design IV        |
| ARCH 431  | Architectural Design V         |
| ARCH 432  | Architectural Design V         |
| ARCH 499A | Architectural Design VI [Rome] |

## 15 Sustainable Design

In ARCH 480, students develop knowledge of passive and active techniques for sustainable architecture. The foundation for sustainable thinking is laid in first year studio (ARCH 197B) with projects that require materials salvage and reuse. In ARCH 203 and 204, students are introduced to life cycle costing, embodied energy, recycled content in materials with readings and lectures on passive design strategies including solar, ventilation, evaporative cooling and wall design strategies for maximum thermal performance. In ARCH 311W, students are exposed to the back and forth between theory and practice within the arena of sustainable design.

Primary Coursework Evidence:

|                 |                                      |
|-----------------|--------------------------------------|
| <b>ARCH 480</b> | <b>Technical Systems Integration</b> |
|-----------------|--------------------------------------|

Additional Coursework Evidence:

|           |  |
|-----------|--|
| ARCH 197B | Basic Design Studio II                 |
| ARCH 203  | Materials and Building Construction I  |
| ARCH 204  | Materials and Building Construction II |
| ARCH 311w | Architectural and Planning Theories    |

## 16 Program Preparation

Students craft their own thesis projects in ARCH 491 and 492 and subsequently craft a program appropriate to the practical conditions and theoretical constructs surrounding the project.

Primary Coursework Evidence:

**ARCH 492 Architectural Design VIII - Thesis**

Additional Coursework Evidence:

ARCH 491 Architectural Design VII - Thesis

## 17 Site Conditions

Beginning with the design-build project in first year studio (ARCH 197B), all studio projects have a real-world site. Students are increasingly required to react and incorporate appropriate contextual issues with relation to the site conditions. ARCH 231 and 232 present a series of site conditions to introduce a variety of contextual and topographical relationships. In third year studio (ARCH 331 and 332), students must represent the manipulation of contour lines. Choosing an appropriate and compelling site to support a desired program is an integral part of the fifth year thesis project (ARCH 491 and 492). In fourth year studio (ARCH 431, 432 and 499A), the emphasis is on urban design and planning with sites located in Rome and other urban centers such as Toronto, Washington, DC, Wilkes-barre and Panama.

Primary Coursework Evidence:

**ARCH 331 Architectural Design III**

Additional Coursework Evidence:

ARCH 197B Basic Design Studio II  
ARCH 231 Architectural Design I  
ARCH 232 Architectural Design II  
ARCH 332 Architectural Design IV  
ARCH 431 Architectural Design V  
ARCH 432 Architectural Design V  
ARCH 499A Architectural Design VI [Rome]  
ARCH 491 Architectural Design VII - Thesis  
ARCH 492 Architectural Design VIII - Thesis

## 18 Structural Systems

Students are required to take three Structures courses, AE 210, AE 421 and AE 422. The first is general and conceptual introduction to structures. The others focus on structures related to materials and systems of materials. AE 421 is wood and steel and AE 422 focuses on masonry

and reinforced concrete. The structures sequence begins in the first year and is complete by the end of second year. Therefore, students are able to begin to incorporate appropriate structural systems in the third year studio design project and thereafter (ARCH 331, 332, 431, 432, 491 and 492). One project in ARCH 480 is to address and clarify structural and other systems into the thesis design project.

Primary Coursework Evidence:

**AE 421            Architectural Structural Systems I**  
**AE 422            Architectural Structural Systems II**

Additional Coursework Evidence:

AE 210            Intro. to Architectural Structural Systems  
ARCH 331        Architectural Design III  
ARCH 332        Architectural Design IV  
ARCH 431        Architectural Design V  
ARCH 432        Architectural Design V  
ARCH 480        Technical Systems Integration  
ARCH 491        Architectural Design VII - Thesis  
ARCH 492        Architectural Design VIII - Thesis

## **19        Environmental Systems**

There are two courses in the Environmental Control Systems sequence, AE 211 and AE 424. In these courses, students learn about the fundamental principles and applications of environmental systems in building (HVAC, acoustics, plumbing and fire and life safety). These courses are completed in the third year, after which students are expected to take into consideration the interdependence of building form, massing, technical and wall systems (ARCH 331, 332, 431 and 432). ARCH 480 also integrates environmental control systems into the thesis studio projects (ARCH 491 and 492).

Primary Coursework Evidence:

**AE 424            Environmental Control Systems**

Additional Coursework Evidence:

AE 211            Intro. to Environmental Control Systems  
ARCH 331        Architectural Design III  
ARCH 332        Architectural Design IV  
ARCH 431        Architectural Design V  
ARCH 432        Architectural Design V  
ARCH 480        Technical Systems Integration  
ARCH 491        Architectural Design VII - Thesis  
ARCH 492        Architectural Design VIII - Thesis

## **20        Life-Safety**

Students are introduced to Life-Safety in materials considerations, sprinkler systems, and egress codes and conditions in ARCH 203 and 204 and AE 211 and 424. In third and fifth year studios (ARCH 331, 332, 491 and 492), students are required to include considerations for egress code requirements. In Professional Practice class (ARCH 451), students are exposed to life-safety codes and zoning regulations and perform a code analysis, including egress, on their schematic thesis project designs.

Primary Coursework Evidence:

**ARCH 451      Architectural Professional Practice**  
**AE 424        Environmental Control Systems I**

Additional Coursework Evidence:

AE 211        Intro. to Environmental Control Systems  
ARCH 203     Materials and Building Construction I  
ARCH 204     Materials and Building Construction II  
ARCH 331     Architectural Design III  
ARCH 332     Architectural Design IV  
ARCH 491     Architectural Design VII - Thesis  
ARCH 492     Architectural Design VIII - Thesis

## **21      Building Envelope Systems**

Materials and Building Construction I and II (ARCH 203 and 204) introduces materials and assemblies, while the AE 211 and 424 sequence examines the building envelope calculations and considerations for optimal envelope performance. Third year studio (ARCH 331 and 332) and thereafter students are able to incorporate this knowledge into their design work (ARCH 431 and 432). Again, ARCH 480 works with the thesis design studio (ARCH 491 and 492) to effectively design the systems appropriate to each project.

Primary Coursework Evidence:

**AE 424        Environmental Control Systems I**

Additional Coursework Evidence:

AE 211        Intro. to Environmental Control Systems  
ARCH 203     Materials and Building Construction I  
ARCH 204     Materials and Building Construction II  
ARCH 331     Architectural Design III  
ARCH 332     Architectural Design IV  
ARCH 431     Architectural Design V  
ARCH 432     Architectural Design V  
ARCH 480     Technical Systems Integration  
ARCH 491     Architectural Design VII - Thesis

ARCH 492 Architectural Design VIII - Thesis

## **22 Building Service Systems**

Building Service systems are covered in AE 211 and 424. Third year studio (ARCH 331) develops an understanding of vertical transportation. All systems are presented to students and integrated into analyses of the thesis project in ARCH 480.

Primary Coursework Evidence:

**AE 211 Intro. to Environmental Control Systems**

**AE 424 Environmental Control Systems I**

Additional Coursework Evidence:

ARCH 331 Architectural Design III

ARCH 480 Technical Systems Integration

## **23 Building Systems Integration**

As mentioned earlier, ARCH 480 coordinates with ARCH 491 and 492 to produce systems designs and diagrams appropriate to each student's thesis investigation.

Primary Coursework Evidence:

**ARCH 480 Technical Systems Integration**

Additional Coursework Evidence:

ARCH 491 Architectural Design VII - Thesis

ARCH 492 Architectural Design VIII - Thesis

## **24 Building Materials and Assemblies**

The foundation courses for building materials and assemblies are ARCH 203 and 204, introducing wood/ steel and masonry/ reinforced concrete, respectively. Various field trips and hands-on workshops enhance the lecture material. These courses are taught concurrently with AE 421 and 422, structures courses organized by the same materials as 203 and 204. Thereafter (ARCH 331 and 332), students are able to incorporate their knowledge of material assemblies into their studio design projects culminating in the conjunction of ARCH 491 and 492 (thesis) and ARCH 480. Of special note is the first year design-build project in first year studio (ARCH 197B) where students also explore material assemblies in a hands-on situation.

Primary Coursework Evidence:

**ARCH 203      Materials and Building Construction I**  
**ARCH 204      Materials and Building Construction II**

Additional Coursework Evidence:

ARCH 197B    Basic Design Studio II  
AE 421        Architectural Structural Systems I  
AE 422        Architectural Structural Systems II  
ARCH 331     Architectural Design III  
ARCH 332     Architectural Design IV  
ARCH 480     Technical Systems Integration  
ARCH 491     Architectural Design VII - Thesis  
ARCH 492     Architectural Design VIII - Thesis

## **25      Construction Cost Control**

During the first year studio design-build projects students are required to remain within a set (usually very restricted) budget. After weeks of design pricing and reconfiguration based on cost estimates of materials, students then purchase materials and erect the final design (ARCH 197B, formerly A&A 104 and ARCH 132). In ARCH 451, students are presented with the importance and use of construction cost control techniques including establishing a realistic budget with the client, estimates, early contractor input, keeping up-to-date with cost trends, the relationship of the global economy (such as China's impact on the cost of construction materials) and the proper use of Value Engineering. Students prepare Architect's Budgetary Estimate of existing buildings with known costs as well as his/ her thesis studio projects.

Primary Coursework Evidence:

**ARCH 451      Architectural Professional Practice**

Additional Coursework Evidence:

ARCH 197B    Basic Design Studio II

## **26      Technical Documentation**

Using AutoDesk Revit®, ARCH 480 takes the lead in technical documentation and specifications in relation to the proposed thesis design project (ARCH 491 and 492). ARCH 203 and 204 introduce proper construction documents drawing, especially wall section design in drawing and modeling.

Primary Coursework Evidence:

**ARCH 480      Technical Systems Integration**

Additional Coursework Evidence:

|          |  |
|----------|--|
| ARCH 491 | Architectural Design VII - Thesis      |
| ARCH 492 | Architectural Design VIII - Thesis     |
| ARCH 203 | Materials and Building Construction I  |
| ARCH 204 | Materials and Building Construction II |

## **27 Client Role in Architecture**

In ARCH 451 lecture modules will review the different types of potential clients as well as their differing needs and expectations for architectural services. Practicing architects as guest speakers will discuss their relationships with clients. Additionally student teams of four will research and present papers on the following topics: The Architecture of the State (The Role of the Architect in Public and Religious Buildings Through History) and The Patron of Architecture. ARCH 331 investigates established local building projects and meets with the architects, client, local officials and contractors as a part of the introductory process. At the mid and/or final reviews, the client and architect return to give feedback on the work.

Primary Coursework Evidence:

**ARCH 451 Architectural Professional Practice**

Additional Coursework Evidence:

ARCH 331 Architectural Design III

## **28 Comprehensive Design**

The capstone project of the Bachelor of Architecture curriculum is the thesis project in ARCH 491 and 492. Working in conjunction with Technical System Integration (ARCH 480), the thesis project includes all aspects of comprehensive design listed above. Evidence of this criteria will be found in the presentation drawings, the accompanying thesis book and the exercises performed for ARCH 480. ARCH 480 also introduces the principles of sustainability which are incorporated in an appropriate manner related specifically to each design proposal. Students begin to incorporate structural and environmental systems, make life-safety provisions, and develop wall sections with consideration for building assemblies in ARCH 331 and 332.

Primary Coursework Evidence:

**ARCH 491 Architectural Design VII - Thesis**

**ARCH 492 Architectural Design VIII - Thesis**

Additional Coursework Evidence:

ARCH 331 Architectural Design III

ARCH 332 Architectural Design IV

ARCH 480 Technical Systems Integration

## **29 Architect's Administrative Role**

Lecture modules on various client types and differing expectations for architectural services, business development, preparing Request for Proposals, forms of contract (AIA and others), contract negotiation, payment methods, the role and selection of consultants, office management including human resources, and the pros and cons of various project delivery methods. Focus will also be placed on the architect's role transition and responsibilities during construction administration.

The students will have an opportunity to visit architectural offices in Washington, D.C. or New York City and practicing architects will also provide lectures on small and mid-size office practice.

Primary Coursework Evidence:

**ARCH 451 Architectural Professional Practice**

### **30 Architectural Practice**

Through lecture modules the students will develop a thorough understanding of the profession of architecture, its current structure, office organization / legal structure and financial management, time and project management and the challenges and future opportunities for the profession. Profiles of various firm types will be presented and discussed.

As mentioned earlier, students will visit architectural offices in Washington, DC and/or New York to witness the practice environment.

- The changing relationships among architects, clients and builders as well as the impact of new technology such as Building Information Modeling (BIM) and Integrated Practice will be presented in class by the professor and guest lecturers.
- A guest lecturer will also discuss risk-avoidance vs. risk management as well as the architect's exposure to professional liability in today's litigious world (including professional liability insurance).
- Diversity is critical to social equity and should be an important part of creative process. The diversity advantage will be discussed in class as well as addressed by a guest lecturer.
- Project delivery methods such as design-bid-build, fast-track, GMP, design-build and other hybrid forms of project delivery will be presented and discussed in class.
- Each student will interview an architectural firm of choice to determine office organization, philosophy / office culture, types of projects, etc. This information will be consolidated into a graphic poster to be presented to the class.
- Readings from Architecture: The Story of Practice and other materials will be required.

Additionally, students (teams of four students for each topic) will present research papers to the class on: The role of architects through history, the development of the architectural profession, the relationship of architectural schools to the profession, patrons of architecture, the development of the mega firm and challenges of world-wide practice, and women and minorities

in architecture.

Primary Coursework Evidence:

**ARCH 451 Architectural Professional Practice**

### **31 Professional Development**

Lecture modules will be provided to prepare students for the transition from the academic environment to the professional world. This will include the development of job search / acquisition strategies and skills (letter of introduction, resume, etc.), as well as advice on employer expectations in practice.

The Internship Development Program (IDP), licensing and examination requirements as well as the importance of life-long learning (Continuing Education) will be presented. Important related materials and web-links will be provided and the responsibilities of both the intern and office for a successful internship will be discussed.

Primary Coursework Evidence:

**ARCH 451 Architectural Professional Practice**

### **32 Leadership**

In ARCH 451, lecture modules will explore the changing roles, relationships and responsibilities of clients, the building trades, contractors, construction managers, designers, technical consultants, interior designers and architects. Emphasis will be placed on the need for the architect to play an important leadership role not only in the design and construction process, but also in shaping their communities and preserving the environment.

Additionally, students (teams of four students for each topic) will present research papers to the class on: Sustainability and Architecture, and The Architects' Role in Politics and Community Affairs.

During the fourth year studio at University Park, ARCH 431 and 432 students engage in current and/or relevant projects in urban design and planning and meet with city officials and developers. This experience gives students a chance to see the processes at work behind the building projects.

Primary Coursework Evidence:

**ARCH 451 Architectural Professional Practice**

Additional Coursework Evidence:

ARCH 431 Architectural Design V

ARCH 432 Architectural Design V

### **33 Legal Responsibilities**

ARCH 451 lecture modules will include: architectural registration law, building codes / regulations, professional service contracts (AIA and other forms), zoning, environmental historic preservation, accessibility and other laws and ordinances which impact the design profession. Student teams will do a community survey to identify non-compliant accessibility conditions, cite the related standard and propose corrective solutions to the condition. Students will also submit a code and accessibility analysis of a studio project. Readings from The ADA Handbook and other materials will be required.

The architect's legal responsibilities are discussed in relation to course materials in ARCH 203 and 204 and AE 211, 421, 422 and 424. In fourth year studio, the relationship, including the legal relationship, between the architect, consultants, client, and city are also elucidated.

Primary Coursework Evidence:

**ARCH 451 Architectural Professional Practice**

Additional Coursework Evidence:

|          |   |
|----------|---|
| ARCH 203 | Materials and Building Construction I   |
| ARCH 204 | Materials and Building Construction II  |
| AE 421   | Architectural Structural Systems I      |
| AE 422   | Architectural Structural Systems II     |
| AE 211   | Intro. to Environmental Control Systems |
| AE 424   | Environmental Control Systems I         |

### **34 Ethics and Professional Judgment**

In ARCH 451, readings and class lectures / discussions will explore contemporary ethics and professional judgment issues including professional organizations' rules of conduct and ethics. Case studies will be reviewed and discussed in class. The role of the AIA and NCARB in the profession will also be presented.

A student team will research and present "The Social Responsibility of the Architect" to the class. Readings from Ethics and the Practice of Architecture and other materials will be required.

Primary Coursework Evidence:

**ARCH 451 Architectural Professional Practice**