ARCHITECTURE, SCHOOL OF

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http://arch.illinois.edu

At Illinois, we are an internationally recognized leader in educating future professionals and scholars in architecture and allied fields. We provide a robust technical and conceptual program that enables students to create and innovate. The depth and breadth of our curriculum enables students to become leaders in a range of disciplinary specialties. Our comprehensive programs prepare students to design and research in a rapidly changing global context from the macro to the micro scale through our bachelors, masters, and doctoral degrees.

Degree Programs in Architecture

Contact: Lee W. Waldrep, Ph.D., Administrator for Undergraduate Student Services
School Office: 117 Temple Buell Hall, 611 Taft Drive, Champaign, IL 61820, (217) 333-7720, lwaldrep@illinois.edu

The School of Architecture offers a four-year preprofessional curriculum leading to the Bachelor of Science in Architectural Studies (BSAS) degree as well as a minor in Architectural Studies. The BS in Architectural Studies degree provides an undergraduate academic education in architecture that can serve as a foundation for advanced professional education. The undergraduate curriculum offers an appropriate balance of basic professional studies in architectural design, architectural history, practice and technology, structures, and studies in the arts and sciences.

The following statement is from the National Architectural Accrediting Board (NAAB):

“In the United States, most state registration boards require a degree from an accredited professional degree program as a prerequisite for licensure. The National Architectural Accrediting Board (NAAB), which is the sole agency authorized to accredit U.S. professional degree programs in architecture, recognizes three types of degrees: the Bachelor of Architecture, the Master of Architecture, and the Doctor of Architecture. A program may be granted a eight-year, three-year, or two-year term of accreditation, depending on the extent of its conformance with established educational standards.

Doctor of Architecture and Master of Architecture degree programs may require a preprofessional undergraduate degree in architecture for admission. However, the preprofessional degree is not, by itself, recognized as an accredited degree.”

The University of Illinois at Urbana-Champaign, College of Fine and Applied Arts, School of Architecture offers the following NAAB-accredited degree programs:

Master of Architecture (Pre-professional undergraduate degrees + 62 graduate credits)
Master of Architecture (Undergraduate degree + 65 prerequisite credit hours + 54 graduate credits)

Next accreditation visit for all programs: 2023

The NAAB Conditions for Accreditation (including Student Performance Criteria) may be found on the NAAB Web site (http://www.naab.org).

Since 1967, the School of Architecture operates a full academic-year study abroad program in Barcelona, Spain, which is open to qualified students on a priority basis. Course offerings parallel those available to students on the Urbana-Champaign campus but stress the European context.


For the Degree of Bachelor of Science in Architectural Studies

In this curriculum, normal progress is imperative. A student failing to complete any required course more than one semester later than the time designated in the curriculum is prohibited from progressive registration in architectural courses until the deficiency is corrected. To continue at the sophomore level and beyond, a student must have a cumulative grade point average of 2.00 (A = 4.0) for all University course work attempted. For the Bachelor of Science in Architectural Studies degree, a total of 120 semester hours are required.

First Year

<table>
<thead>
<tr>
<th>First Semester</th>
<th>Hours</th>
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<tbody>
<tr>
<td>MATH 220 Calculus</td>
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<td>or 221</td>
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<td>General Education¹</td>
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<td>FAA 101 Arts at Illinois</td>
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<td><strong>Semester Hours</strong></td>
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Second Year

<table>
<thead>
<tr>
<th>Second Semester</th>
<th>Hours</th>
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<tr>
<td>ARCH 172 Drawing and Modeling</td>
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<tr>
<td>ARCH 210 Intro to the Hist of Arch</td>
<td>3</td>
</tr>
<tr>
<td>MATH 231 Calculus II or PHYS 101</td>
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<tr>
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<tr>
<td>General Education¹</td>
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<tr>
<td><strong>Semester Hours</strong></td>
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Second Year

<table>
<thead>
<tr>
<th>First Semester</th>
<th>Hours</th>
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<tbody>
<tr>
<td>ARCH 231 Anatomy of Buildings</td>
<td>4</td>
</tr>
<tr>
<td>ARCH 273 Representation</td>
<td>3</td>
</tr>
<tr>
<td>UP 101 Introduction to City Planning (or approved urban studies substitute)⁵</td>
<td>3</td>
</tr>
<tr>
<td>General Education or Electives¹³</td>
<td>6</td>
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<tr>
<td><strong>Semester Hours</strong></td>
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Second Semester

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<tr>
<th>Second Semester</th>
<th>Hours</th>
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<tbody>
<tr>
<td>ARCH 232 Structural Fundamentals</td>
<td>4</td>
</tr>
<tr>
<td>ARCH 274 Strategies of Architectural Design</td>
<td>3</td>
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<tr>
<td>General Education or Electives¹³</td>
<td>9</td>
</tr>
<tr>
<td><strong>Semester Hours</strong></td>
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</table>

Information listed in this catalog is current as of 10/2017.
Third Year

First Semester
ARCH 321 Environment, Architecture, and Global Health 3
Electives 3 3
ARCH 433 Design of Steel and Reinforced Concrete Structures 4

Semester Hours 10

Second Semester
ARCH 434 Environmental Control Systems I 5
ARCH 435 Structural Systems and Construction Methods 4

Semester Hours 9

Fourth Year

First Semester
ARCH 473 Architectural Design and Performance Architectural History 6
Electives 3 3

Semester Hours 13

Second Semester
ARCH 474 Architectural Design and Making Electives 3 6

Semester Hours 12

Total Hours: 104

1 See current University of Illinois General Education requirements. (https://courses.illinois.edu/gened/DEFAULT/DEFAULT)
   The General Education quantitative reasoning requirement I is satisfied by the required MATH 220 or MATH 221 course; the quantitative reasoning II requirement is satisfied by the MATH 231 or PHYS 101 course. Students considering a concentration in Building Structures or Structural Engineering should take MATH 231. The Advanced Composition requirement may be fulfilled by either a separate, approved Advanced Composition course or by an Advanced Composition course which also satisfies one of the general education distribution list requirements. If by the latter, electives would be taken to make up the credit deficiency.

General Education foreign language requirement 0-12 hours: Students entering the University of Illinois as freshmen in fall 2000 or later need to complete the foreign language requirement in order to graduate. To satisfy this requirement, students must complete a third semester level college foreign language course. This requirement may also be satisfied by three years of the same foreign language in high school. Students entering the University of Illinois without three years of the same foreign language in high school must take a foreign language placement test to determine the courses in which to enroll.

2 The Composition I requirement may be fulfilled by any of the following courses or course sequences (placement is determined by examination): ESL 111 and ESL 112; ESL 115, RHET 100, RHET 101, and RHET 102; or RHET 105; or CMN 111 and CMN 112.

3 For information about electives, see the Undergraduate Handbook at the FAA website (https://faa.illinois.edu). A maximum of nine hours may be taken as professional electives.

4 Architectural history: All students in the undergraduate program in architecture must fulfill the architectural history requirement: three courses in addition to ARCH 210. Select from: ARCH 222, ARCH 314, ARCH 402, ARCH 403, ARCH 407, ARCH 409, Section B (Barcelona only), ARCH 410, ARCH 411, ARCH 412, ARCH 413, ARCH 414, ARCH 415, ARCH 416, ARCH 417, or ARCH 418.

5 The UP 101 requirement can be fulfilled by substituting one of the following approved courses: ARCH 418, ARCH 468, GEOG 204, GEOG 210, and GEOG 483.

Minor in Architectural Studies

The minor in Architectural Studies allows non-architecture undergraduate students to gain an overview of architecture by taking a series of required courses in architecture. This is the only undergraduate minor offered by the School of Architecture.

Course Requirements

The architecture minor requires the successful completion of a minimum of 20 hours of architecture courses. Students entering the program with advanced credit for required courses must take courses from the Additional Courses list to attain the total hours needed for completion of the minor. All students in the minor must have at least 6 hours of 300- or 400-level courses.

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<th>Code</th>
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<th>Hours</th>
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<td>Required Courses</td>
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<tr>
<td>ARCH 101</td>
<td>Introduction to Architecture</td>
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<td>ARCH 172</td>
<td>Drawing and Modeling</td>
<td>3</td>
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<tr>
<td>ARCH 210</td>
<td>Intro to the Hist of Arch</td>
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<tr>
<td>ARCH 231</td>
<td>Anatomy of Buildings</td>
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<td>Additional Courses</td>
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Select two of the following: 6-8

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<thead>
<tr>
<th>Code</th>
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<tr>
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<td>Environment Tech HVAC</td>
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<td>ARCH 342</td>
<td>Environment Tech Ltg &amp; Acoust</td>
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<td>ARCH 351</td>
<td>Statics &amp; Dynamics</td>
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<td>ARCH 352</td>
<td>Mech of Mat &amp; Design Appl</td>
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<tr>
<td>ARCH 224</td>
<td>Islamic Gardens &amp; Architecture</td>
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<tr>
<td>ARCH 224</td>
<td>History of World Landscapes</td>
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<tr>
<td>ARCH 402</td>
<td>Intro to Hist of Arch Theory</td>
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<tr>
<td>ARCH 403</td>
<td>Spec Topics in Arch History</td>
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<tr>
<td>ARCH 407</td>
<td>Rome: The Eternal City</td>
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<tr>
<td>ARCH 410</td>
<td>Ancient Egyptian &amp; Greek Arch</td>
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<td>ARCH 411</td>
<td>Ancient Roman Architecture</td>
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<tr>
<td>ARCH 412</td>
<td>Medieval Architecture</td>
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<td>ARCH 413</td>
<td>Renaissance Architecture</td>
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<td>ARCH 414</td>
<td>Baroque &amp; Rococo Arch</td>
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<tr>
<td>ARCH 415</td>
<td>Neoclass &amp; Nineteen Cent Arch</td>
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<td>ARCH 416</td>
<td>Modern American Architecture</td>
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<tr>
<td>ARCH 417</td>
<td>Twentieth-Century Architecture</td>
<td></td>
</tr>
<tr>
<td>ARCH 418</td>
<td>Hist of the Urban Environment</td>
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</tbody>
</table>

Total Hours 19-21

Prerequisites

Students must comply with the prerequisite requirements of courses to be taken under this program. Some of these requirements may be satisfied while in the program.

Admission

Admission to the minor will be processed by the School of Architecture Undergraduate Programs Office. Students may enter the Minor in Architectural Studies from sophomore year until such time that allows
the completion of the minor before graduating in their major area of study.

Advising
Advising of students in the minor will be conducted by the advisors in the Undergraduate Programs Office of the School of Architecture.

Certification of Successful Completion
The Associate Dean for Undergraduate Academic Affairs in the College of Fine and Applied Arts (FAA) will certify successful completion of the minor.

Students must declare their intentions and be admitted to the program to pursue the Minor in Architectural Studies.

ARCH Class Schedule (https://courses.illinois.edu/schedule/DEFAULT/DEFAULT/ARCH)

Courses
ARCH 101 Introduction to Architecture credit: 3 Hours.
An introduction to architecture, architectural education and the profession with emphasis on issues that influence architecture and the people and processes involved.

ARCH 164 Architecture as a 2nd Language credit: 3 Hours.
Unique to architects is the combination of thinking tools in a conceptual toolbox, a resource to which they have access at any time and in all situations. These tools can be thought of as a second language. Architecture as a Second Language is a hands-on, experiential online course in which students are immersed in challenging activities similar to those architects face. The course helps develop new perspectives, capabilities, and insights that can be applied to any calling or discipline.

ARCH 172 Drawing and Modeling credit: 3 Hours.
Introduction to the architectural graphic communication skills that architects use to visualize, analyze, and record creative thoughts: freehand sketching, architectural delineation, and digital applications. Prerequisite: ARCH 171 or consent of instructor. Concurrent enrollment in ARCH 231 or consent of instructor.

ARCH 199 Undergraduate Open Seminar credit: 1 to 5 Hours.
May be repeated.

ARCH 210 Intro to the Hist of Arch credit: 3 Hours.
Visual and cultural analysis of selected buildings, urban spaces, and cities, from ancient Greece to modern times; emphasizes the architectural traditions of Western Civilization, especially as they affect the built environment of America and the Middle West. Prerequisite: Sophomore standing or consent of instructor.

ARCH 222 Islamic Gardens & Architecture credit: 3 Hours.
Same as LA 222. See LA 222. This course satisfies the General Education Criteria for: Humanities - Hist Phil Cultural Studies - Non-West

ARCH 231 Anatomy of Buildings credit: 4 Hours.
A holistic approach to the introduction of architectural technology. Enabling students to integrate technical material with design, this lecture/lab course addresses building codes, zoning, construction documentation and delivery, digital fabrication, and the impact of energy, sustainability, and environmental forces on building construction, comparing general principles of light frame and heavy construction materials, components, and systems. Students learn how to build virtually and physically, understanding the roles design and construction professionals play on integrated teams.

ARCH 232 Structural Fundamentals credit: 4 Hours.
The study of forces, their distribution, and their impact on building structure. Topics include: equilibrium of rigid bodies in two and three dimensions; trusses; shear and bending moments in beams; arches and frames; stresses, strains, and deformations in axially loaded members; direct shear and bearing stresses; torsion; beam stresses and deflections; introduction to the design of structural members; and architectural applications. Prerequisite: MATH 220 or MATH 221, and MATH 231 or PHYS 101.

ARCH 271 Graphics for Architects credit: 4 Hours.
Introduction to architectural graphic communication skills that architects use to visualize, analyze, and record creative thoughts: 1) freehand sketching; 2) architectural delineation; and 3) digital applications. Prerequisite: ARCH 101 and concurrent enrollment in ARCH 231.

ARCH 273 Representation credit: 3 Hours.
Develops understanding of the representation of ideas, values, and meaning in the built environment. Focuses on three topic areas: analysis, technical communication, and modeling. Exposure to multiple software tools and mastery of basic skills in each. Prerequisite: ARCH 172 or consent of instructor.

ARCH 274 Strategies of Architectural Design credit: 3 Hours.
Focuses on understanding architecture as holistic synthesis of principles, technology and form. Content is arranged in six areas: Research and Analysis, Typology Analysis, Street Analysis, Block Analysis, Neighborhood Analysis, and Development and Presentation. Students work both on individual assignments and in teams on design projects. Emphasis on combining graphic and modeling skills with analytical skills. Exercises require demonstration of skills and concepts introduced in earlier design and technology courses. Prerequisite: ARCH 273 or consent of instructor.

ARCH 300 Ind Studies in Urban Design credit: 3 Hours.
The individual study of selected topics involving the history, design, and function of significant European cities. Prerequisite: One year of history of architecture or Art History; consent of instructor.

ARCH 314 History of World Landscapes credit: 4 Hours.
Same as LA 314. See LA 314. This course satisfies the General Education Criteria for: Advanced Composition Humanities - Hist Phil Cultural Studies - Western
ARCH 321 Environment, Architecture, and Global Health  credit: 3 Hours.
This course surveys current research at the intersection of the built environment, health, and well-being. It emphasizes relationships among people and multiple scales of the environments they inhabit and the health and well-being consequences of these relationships. It comparatively examines these relationships within a broad range of Western and Non-Western cultures and contexts by introducing significant historical and contemporary theories, data of relevance, research processes, and applications in environmental design and planning processes. To improve person-environment fit, the roles of social groups, institutions, and organizations in the person-environment-health/well-being nexus within various cultural and geographic contexts are examined and compared.

ARCH 341 Environment Tech HVAC  credit: 4 Hours.
Study of the control of thermal environment, mechanical and related building sub-systems, and their integration into the overall building design. The specific topics include: thermal comfort and behavioral implications; fundamentals of thermal behavior of buildings; the principles of heat and moisture in buildings; indoor air quality and "Sick Building Syndrome", energy and sustainability implications of building design; and mechanical systems including HVAC and plumbing systems. Prerequisite: ARCH 233.

ARCH 342 Environment Tech Ltg & Acoust  credit: 4 Hours.
Study of the control of luminous and sonic environments, the supporting building systems, and their integration into the overall building design. Specific topics include: lighting fundamentals; light sources; effects of lighting on comfort and performance; lighting calculations and design; energy economy and sustainability; acoustic fundamentals; room acoustics; noise control; and basic electrical and sound systems. Prerequisite: ARCH 233.

ARCH 351 Statics & Dynamics  credit: 4 Hours.
Study of equilibrium of rigid bodies in two and three dimensions; trusses; shear and bending moments in beams; arches and frames; cables; friction; introduction to dynamics; architectural applications. Prerequisite: MATH 220 or MATH 221; and MATH 231 or PHYS 101.

ARCH 352 Mech of Mat & Design Appl  credit: 4 Hours.
Study of stresses, strains, and deformations in axially loaded members; direct shear and bearing stresses; torsion; beam stresses and deflections; stresses under combined loading; column buckling; design of structural members; introduction to statically indeterminate structures; architectural applications. Prerequisite: ARCH 351.

ARCH 373 Arch Design and the Landscape  credit: 5 Hours.
Building design in a landscape setting; creation of place; schematic building design and site planning issues; universal design and accessibility; principles of energy efficient building design; human-environment relationship issues; and architectural design and presentation methods; required field trips. Prerequisite: ARCH 272.

ARCH 374 Arch Design and the City  credit: 5 Hours.
Building design in the community setting; creation of place; introductory urban design and site planning issues; including universal design and accessibility; human-built environment relationship issues; architectural design and presentation methods; required field trips. Prerequisite: ARCH 373.

ARCH 399 Study in Versailles, France  credit: 0 to 18 Hours.
Study in the University of Illinois Architectural Program at Versailles, France. Approved for S/U grading only. Prerequisite: Concurrent registration in the Versailles, France Study Abroad Program.

ARCH 400 Senior Honors in Architecture  credit: 1 to 4 Hours.
For candidates for honors in Architecture. Independent guided study and research in a selected area of architecture. 1 to 4 undergraduate hours. No graduate credit. May be repeated to a maximum of 6 hours with consent of Director of School. Prerequisite: Senior standing in architecture, a University grade-point average of 3.0 or, in special cases, consent of Director of School.

ARCH 401 Independent Study  credit: 0 to 4 Hours.
Independent guided study and investigation in a selected area of architecture. 0 to 4 undergraduate hours. 0 to 4 graduate hours. Approved for both letter and S/U grading. May be repeated. Prerequisite: Junior standing in architecture, written proposal approved by a sponsoring faculty member and the approval of the Director of the School.

ARCH 402 Intro to Hist of Arch Theory  credit: 3 Hours.
Architectural theory, criticism, and historiography from antiquity to the present. Based on close readings of texts from antiquity to the present day. 3 undergraduate hours. 3 graduate hours. Prerequisite: Sophomore standing.

ARCH 403 Spec Topics in Arch History  credit: 3 Hours.
Special topics in Architectural History courses. Topics and subject matter to be published in course listings. 3 undergraduate hours. 3 graduate hours. May be repeated in separate terms to a maximum of 6 hours. Prerequisite: ARCH 210 and sophomore standing.

ARCH 407 Rome: The Eternal City  credit: 3 Hours.
Considers the architecture and urbanism of the city of Rome across time. Special focus will be placed on critical strategies for understanding urban sites. 3 undergraduate hours. 3 graduate hours. Prerequisite: Sophomore standing.

ARCH 409 Special Topics in Spanish Arch  credit: 3 Hours.
Explores aspects of the architecture and urban design of Spain from antiquity until the present. 3 undergraduate hours. 3 graduate hours. May be repeated to a maximum of 6 hours. Prerequisite: ARCH 210.

ARCH 410 Ancient Egyptian & Greek Arch  credit: 3 Hours.
Architecture and urban form in Egypt and the Greek world through the Hellenistic period. Same as CLCV 410. 3 undergraduate hours. 3 graduate hours. Prerequisite: ARCH 210, ARTH 111 or CLCV 131.

ARCH 411 Ancient Roman Architecture  credit: 3 Hours.
Architecture and urban form in the ancient Roman world from the Etruscans through the Late Antiquity. Connections between Roman Late Antique, Early Christian, and Byzantine Architecture will be considered. Same as CLCV 411. 3 undergraduate hours. 3 graduate hours. Prerequisite: ARCH 210, ARTH 111, CLCV 131, or CLCV 132.

ARCH 412 Medieval Architecture  credit: 3 Hours.
Explores aspects of the architecture and urban design of medieval Europe from late antiquity to the late Middle Ages (approximately 300-1400). Same as MDVL 412. 3 undergraduate hours. 3 graduate hours. Prerequisite: ARCH 210 or ARTH 111.

ARCH 413 Renaissance Architecture  credit: 3 Hours.
Developments in architecture, urban design, and garden art in Italy and northern Europe in the fifteenth through the sixteenth centuries. 3 undergraduate hours. 3 graduate hours. Prerequisite: ARCH 210, ARTH 112, or consent of instructor.

ARCH 414 Baroque & Rococo Arch  credit: 3 Hours.
Developments in architecture, urban design, and garden art in Italy, France, Germany, and England in the seventeenth and eighteenth centuries. 3 undergraduate hours. 3 graduate hours. Prerequisite: ARCH 210, ARTH 112, or consent of instructor.
ARCH 415  Neoclass & Nineteen Cent Arch  credit: 3 Hours.
Evolution of Continental and British architecture and urban planning from 1750 to World War I; includes some reference to American architecture of the same period. 3 undergraduate hours. 3 graduate hours. Prerequisite: ARCH 210 or ARTH 112, or consent of instructor.

ARCH 416  Modern American Architecture  credit: 3 Hours.
Development of American architecture and urban planning from the seventeenth century to the present. 3 undergraduate hours. 3 graduate hours. Prerequisite: ARCH 210, ARTH 112, or consent of instructor.

ARCH 417  Twentieth-Century Architecture  credit: 3 Hours.
Developments in Western architecture and urban design from 1900 to the present; examines the rise of modernism in Europe and after World War II; includes work in the United States, India, Japan, and Australia. 3 undergraduate hours. 3 graduate hours. Prerequisite: ARCH 210 or ARTH 112, or consent of instructor.

ARCH 418  Hist of the Urban Environment  credit: 3 Hours.
Examines the evolution of town planning and urban design in Western civilization from prehistory to the present; studies cultural and technical advancements affecting the form of the urban environment. 3 undergraduate hours. 3 graduate hours.

ARCH 419  Historic Building Preservation  credit: 3 Hours.
Introduces historic preservation: legal, financial, and administrative assistance, graphic examination of restored buildings and sites, and application of conservation technology. 3 undergraduate hours. 3 graduate hours.

ARCH 423  Soc/Beh Factors for Design  credit: 3 Hours.
Research-oriented introduction to existing social and behavioral knowledge, methods, and tools for relating man to his physical and social environment, with implications for theories and a philosophy of architectural design. 3 undergraduate hours. 3 graduate hours.

ARCH 424  Gender & Race in Contemp Arch  credit: 3 Hours.
Analyzes how the built environment reflects social attitudes towards gender and race. Identifies the work of women and people of color in architecture and related disciplines as consumers, critics, and creators of the environment. Provides links with valuable professional networks in Chicago and elsewhere. Same as GWS 424. 3 undergraduate hours. 3 graduate hours. Prerequisite: Consent of instructor.

ARCH 433  Design of Steel and Reinforced Concrete Structures  credit: 4 Hours.
Loads and load combinations; design methods/structural safety; steel as a structural material; design of structural steel members subject to tension, compression, bending, shear, and combined forces as well as bolted and welded joints. Reinforced concrete as a structural material; transformed sections; design for bending, shear, and serviceability; design of one-way slabs and columns. 4 undergraduate hours. 4 graduate hours. Credit is not given for both ARCH 433 and ARCH 451; credit is not given for both ARCH 433 and ARCH 452. Prerequisite: ARCH 232.

ARCH 434  Environmental Control Systems I  credit: 5 Hours.
Study of the control of thermal, luminous, and sonic environments with an emphasis on passive means of controls. Specific topics include: thermal comfort and behavioral implications; fundamentals of thermal behavior of buildings; the principles of heat and moisture in buildings; lighting fundamentals; light sources; effects of lighting on comfort and performance; energy economy and sustainability; acoustic fundamentals; room acoustics; noise control; basic electrical, plumbing, vertical transportation, and life safety systems. 5 undergraduate hours. 5 graduate hours. Prerequisite: Concurrent enrollment in ARCH 374 or consent of instructor.

ARCH 435  Structural Systems and Construction Methods  credit: 4 Hours.
Presents a unified approach to architectural structures and construction technology to enable students to integrate design, engineering, and construction, while providing an understanding of how material/component/system decisions impact the work of architects, engineers, and constructors. Using a series of case-studies and project-based assignments, students learn about the various structural systems and construction methods used in the design of buildings. The evolution and state-of-the-art in structure and construction strategies will be discussed to provide requisite breadth and depth. Topics covered include: structural and building codes; structural systems and their layout planning; foundation systems; construction methods and technologies in wood, steel, concrete, and masonry; sustainability considerations; detailing; and digital modeling. 4 undergraduate hours. 4 graduate hours. Prerequisite: ARCH 231 and ARCH 232.

ARCH 441  Heat and Moisture in Buildings  credit: 3 Hours.
Provides information and skills necessary for the designer to deliver dry, durable and healthful buildings. First half covers theory, including heat transfer, psychrometrics, steady-state diffusion and conduction analysis, and transient analysis. Second half covers building applications: roofs, walls, windows, foundations, and mechanical systems. 3 undergraduate hours. 3 graduate hours. Prerequisite: ARCH 341 or equivalent.

ARCH 451  Theory & Design Steel & Timber  credit: 4 Hours.
Analysis and design of steel and timber structures for buildings. Steel columns, beams, trusses, connections, roof and floor framing systems; timber beams, columns, roof and floor framing systems. 4 undergraduate hours. 4 graduate hours. Prerequisite: ARCH 352.

ARCH 452  Theory of Reinforced Concrete  credit: 4 Hours.
Concrete materials; behavior of reinforced concrete construction; behavior and design of structural elements, one-way slabs, beams, and girders; columns; ACI code requirements; and introduction to continuity in reinforced concrete structures. Course Information: 4 undergraduate hours. 4 graduate hours. Prerequisite: ARCH 352.

ARCH 460  International Architecture  credit: 4 Hours.
Interdisciplinary opportunity to focus on study, and record the design and planning of cities and rural settlements in other cultures. Through directed study and participation in the intellectual environment of a foreign university, students analyze unfamiliar settings, developing insights to enrich their professional development. 4 undergraduate hours. 4 graduate hours. May be repeated in separate terms to a maximum of 8 hours. Prerequisite: Junior standing or higher in the School of Architecture, Department of Landscape Architecture, or the Department of Urban and Regional Planning.
ARCH 461 Critical Travel Documentation credit: 4 Hours.
Modern and historic city forms and rural practices are analyzed while experiencing the realities of daily life traveling in another culture. Journals include drawings and writings that record buildings, environs, and landscapes. 4 undergraduate hours. 4 graduate hours. May be repeated in separate terms to a maximum of 8 hours. Prerequisite: Senior standing or higher in the School of Architecture. 0 to 12 undergraduate hours. 0 to 12 graduate hours. Approved for S/U grading only. May be repeated in separate terms up to 12 undergraduate hours or 8 graduate hours, if topics vary. Prerequisite: Consent of instructor. For majors only.

ARCH 490 Special Topics in Contemporary Architecture credit: 1 to 4 Hours.
Selected topics in and applications of contemporary architecture; see Class Schedule or department office for current topics. 1 to 4 undergraduate hours. 1 to 4 graduate hours. May be repeated in separate terms up to 12 undergraduate hours or 8 graduate hours, if topics vary. Prerequisite: Consent of instructor. For majors only.

ARCH 491 Arch Professional Internship credit: 0 Hours.
Full-time or part-time professionally supervised field experience in design intended to introduce students to the practice of architecture in a commercial firm or agency of government. Students work in the school-approved firm or agency of their choice. Written work reports and reflective experiential learning reports are required. 0 undergraduate hours. 0 graduate hours. Approved for S/U grading only. May be repeated in separate terms a maximum of 3 times. Prerequisite: Graduate standing or upper-level undergraduate standing, or consent of instructor. For students enrolled in the BSAS and M.Arch. programs of study only.

ARCH 498 Directed Research in Arch credit: 1 to 4 Hours.
Participation in on-going research projects which may include energy management, environmental perception, facilities development, building science, and other topics. 1 to 4 undergraduate hours. 1 to 4 graduate hours. May be repeated to a maximum of 8 hours. Prerequisite: Approval of written proposal by instructor and Director of School.

ARCH 499 Off-Campus Study credit: 0 to 12 Hours.
Provides opportunity for approved off-campus study. Detailed proposal for study off campus must be submitted for approval to the appropriate committee in the School prior to such study. Final determination of credit and its application toward the degree is made after a review of the student's off-campus work by the above committee and the Director of School. 0 to 12 undergraduate hours. 0 to 12 graduate hours. Approved for both letter and S/U grading. Prerequisite: Senior or graduate standing in architecture and approval of program prior to registration.

ARCH 471 Fundamentals of Arch Design credit: 6 Hours.
Basic architectural design methods, fundamentals, principles and concepts including creative problem solving in two- and three-dimensions. 6 undergraduate hours. 6 graduate hours. Prerequisite: Limited graduate standing in Architecture and concurrent enrollment in ARCH 231.

ARCH 472 Arch Des in Landscape & Cities credit: 6 Hours.
Intermediate architectural design methods, fundamentals, principles and concepts focusing on buildings in landscape and urban contexts. 6 undergraduate hours. 6 graduate hours. Prerequisite: ARCH 471 and concurrent enrollment in ARCH 233.

ARCH 473 Architectural Design and Performance credit: 6 Hours.
Schematic design and development of a small-scale public building emphasizing the integration of the basic elements of building: materials, details, structure, technology, program, life safety, and universal design. 6 undergraduate hours. 6 graduate hours. Prerequisite: ARCH 371 and ARCH 372.

ARCH 474 Architectural Design and Making credit: 6 Hours.
Building design that emphasizes the creative process of making, experimentation, and theories of contemporary methods and materials. Projects focus on translating design ideas at multiple scales into reality through computation, representation, or production, utilizing fabrication processes. Outcomes foreground entrepreneurial design thinking and team-based learning. 6 undergraduate hours. 6 graduate hours. Prerequisite: ARCH 473.

ARCH 475 Arch Design & Development credit: 6 Hours.
Schematic design and development of a small-scale public building emphasizing the integration of the basic elements of building: materials, details, structure, technology, program, life safety, and universal design. 6 undergraduate hours. 6 graduate hours. Prerequisite: ARCH 374 or ARCH 472.

ARCH 476 Arch Design & Exploration credit: 6 Hours.
Exploration of boundaries of architecture and the built environment. Focused exploration into specific design topics, such as issue-oriented building problems, urban design theory, intermediate building design and site planning theory, human-environment relationship theory, interdisciplinary design, and architectural design and presentation methods. 4 undergraduate hours. 4 graduate hours. Prerequisite: ARCH 475.