

ARCHITECTURE (ARCH)

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Courses primarily for undergraduates:

ARCH 201: Architectural Design I

(1-15) Cr. 6. F.

Prereq: Completion of the pre-professional program and admission into the professional program in Architecture.

Introduction to architectural design including design process, drawing conventions, methods of design analysis, and model making using both analog and digital tools. Studio projects focus on formal and volumetric principles of pattern and composition, investigations of site conditions, and understanding of scale. Field trips to relevant architectural sites.

ARCH 201H: Architectural Design I, Honors

(1-15) Cr. 6-7. F.

Prereq: Completion of the pre-professional program and admission into the professional program in Architecture

Introduction to architectural design including design process, drawing conventions, methods of design analysis, and model making using both analog and digital tools. Studio projects focus on formal and volumetric principles of pattern and composition, investigations of site conditions, and understanding of scale. Field trips to relevant architectural sites.

ARCH 202: Architectural Design II

(1-15) Cr. 6. S.

Prereq: ARCH 201; MATH 145; PHYS 131 and 131L

Continuation of fundamental architectural design exploration. Studio projects focus on the generation of ideas based on experience and systematic analysis of tectonics. Emphasis on design development through detail, materiality, and spatial relationships. Students work in groups and individually. Representational methods expand on architectural conventions through experimentation. Field trips to relevant architectural sites.

ARCH 202H: Architectural Design II, Honors

(1-15) Cr. 6-7. S.

Prereq: ARCH 201, MATH 145; and PHYS 131 and 131L

Continuation of fundamental architectural design exploration. Studio projects focus on the generation of ideas based on experience and systematic analysis of tectonics. Emphasis on design development through detail, materiality, and spatial relationships. Students work in groups and individually. Representational methods expand on architectural conventions through experimentation. Field trips to relevant architectural sites.

ARCH 220: Contemporary Architecture

(3-0) Cr. 3. F.

Survey of global architectural ideas and practices from 1990 to the present. Emphasis will be given to recent movements and architectural manifestations, as well as close examinations of socio-cultural conditions for contemporary practice.

ARCH 221: Histories and Theories of Architecture to 1750

(3-0) Cr. 3. F.

Survey of architectural ideas, theories, and practices before 1750. Emphasis on the mutually formative relationship between architecture and the social, cultural, economic, and political forces, nationally and globally, in which it is produced. Meets International Perspectives Requirement.

ARCH 230: Design Communications I

(2-2) Cr. 3. F.

Prereq: Admission to the professional program in architecture

Investigations of various design media and their applications to design. Exercises to develop representational skills and perceptual sensitivity.

ARCH 231: Advanced Design Representation

Cr. 3. Alt. F., offered irregularly.S.

Prereq: ARCH 230; Junior, Senior or graduate standing

Advanced investigations of various design media and their applications to design. Emphasis on careful consideration of media, mixed-media strategies and development of craft.

ARCH 301: Architectural Design III

(1-15) Cr. 6. F.

Prereq: ARCH 202

Consideration of landscape as a constructed, cultural artifact. Projects address the perceptual aspects and strategies of situation and location; examination of environmental phenomena and patterns of use and settlement as revealed and affected by the architectural artifact. Development of a critical design process is stressed.

ARCH 301H: Architectural Design III, Honors

(1-15) Cr. 6-7. F.

Prereq: ARCH 202

Consideration of landscape as a constructed, cultural artifact. Projects address the perceptual aspects and strategies of situation and location; examination of environmental phenomena and patterns of use and settlement as revealed and affected by the architectural artifact. Development of a critical design process is stressed.

ARCH 302: Architectural Design IV

(1-15) Cr. 6. S.

Prereq: ARCH 301 and minimum 2.0 GPA in previous studio courses

Design for housing in an urban context that demonstrates a synthetic understanding of diverse scales of use and occupation as shaped by user requirements, site conditions, and principles for inclusive design. Consideration of regulatory requirements and measurable environmental impacts of the proposal on its site.

ARCH 302H: Architectural Design IV, Honors

(1-15) Cr. 6-7. S.

Prereq: ARCH 301 and minimum 2.0 GPA in previous studio courses

Design for housing in an urban context that demonstrates a synthetic understanding of diverse scales of use and occupation as shaped by user requirements, site conditions, and principles for inclusive design. Consideration of regulatory requirements and measurable environmental impacts of the proposal on its site.

ARCH 321: History of the American City

(3-0) Cr. 3.

Prereq: Sophomore classification

Study of the development of the built environment and urban condition in the United States from the colonial period to today. Primary attention is given to urban spatial organization, built form, technological change, regulatory and funding patterns, and social categories such as class, race, and gender. Credit counts toward fulfillment of History, Theory, Culture requirements.

Meets U.S. Diversity Requirement

ARCH 322: Histories and Theories of Architecture after 1750

(3-0) Cr. 3. S.

Prereq: Sophomore Classification

Survey of architectural ideas, theories and practices from 1750 to 1990. Emphasis on the mutually formative relationship between architecture and the social, cultural, economic, and political forces, nationally and globally, in which it is produced.

Meets International Perspectives Requirement.

ARCH 334: Computer-aided Architectural Design

(2-2) Cr. 3.

Exploration of current and potential applications of computing in architectural design. Projects engage digital design methods, data and media workflows.

ARCH 335: Three-Dimensional Studio

(1-4) Cr. 3. Repeatable, maximum of 6 credits.

This course deals with three dimensional problems in visual invention, organization, and expression emphasizing creative manipulation of tools, materials, and techniques as means for three-dimensional thinking. Projects cover the additive (modeling), subtractive (carving), substitutional (casting) as well as constructive techniques.

ARCH 345: Building Science and Technology I

(Dual-listed with ARCH 545). (2-0) Cr. 2. F.

Prereq: Undergraduate: Admission to the professional program in architecture; concurrent enrollment in ARCH 345L; graduate: Admission to the M. Arch. program and concurrent enrollment in ARCH 505 and ARCH 595; concurrent enrollment in ARCH 545L

First course in a sequence focused on architectural building technologies. Lectures and labs cover: environmental forces and systems (solar orientation, climate, daylighting, natural ventilation, human comfort and occupancy patterns), materials and assemblies (drawing conventions, building codes, and physical properties of materials) and fundamental structural principles (forces/loads, equilibrium, and stability) to understand impact of the built environment on human health, safety, and welfare at building scales.

ARCH 345L: Building Science and Technology I Lab

(0-2) Cr. 1. F.

Prereq: Admission to the professional program in architecture; concurrent enrollment in ARCH 345.

Laboratory to accompany Arch 345 and must be taken concurrently. Integrating building technologies into architectural designs through experiments and exercises in laboratory format.

ARCH 346: Building Science and Technology II

(Dual-listed with ARCH 546). (3-0) Cr. 3. S.

Prereq: Undergraduate: ARCH 345, ARCH 345L, MATH 145, and PHYS 131 and 131L; concurrent enrollment in ARCH 346L. Graduate: ARCH 505, ARCH 545, ARCH 545L, and ARCH 595; concurrent enrollment in ARCH 506, ARCH 546L and ARCH 596.

Second course in a sequence focused on architectural building technologies. Lectures and labs cover: environmental systems (heat transfer in the building envelope, passive heating and cooling, daylighting, thermal comfort, analytical guidelines and building energy calculation methods), materials & assemblies (building envelope systems, accessibility, egress, and material properties), and structural systems (structural system selection/comparison, and design and analysis of "form-active" compression and tension structures) to understand impact of the built environment on human health, safety, and welfare at building scales.

ARCH 346L: Building Science and Technology II Lab

(0-4) Cr. 2. S.

Prereq: ARCH 345, ARCH 345L, MATH 145 and PHYS 131 and 131L; concurrent enrollment in ARCH 346.

Laboratory to accompany Arch 346 and must be taken concurrently. Integrating building technologies into architectural designs through experiments and exercises in laboratory format.

ARCH 347: Building Science and Technology III

(Dual-listed with ARCH 547). (3-0) Cr. 3. F.

Prereq: Undergraduate: ARCH 346, Arch 346L; concurrent enrollment in ARCH 347L. Graduate: ARCH 506, ARCH 546, ARCH 546L, and ARCH 596 or advanced standing in the M.Arch program; concurrent enrollment in ARCH 601 and ARCH 547L.

Third course in a sequence focused on architectural building technologies. Lectures and labs cover: multistory building framing, assembly, and enclosure systems, sizing and selecting structural framing components (foundations, columns, beams, etc.), and an environmental design process that demonstrates the ability to integrate climate into the control of thermal, luminous, ventilative and acoustic environments. Introduction to plumbing and rain water collection systems to understand the impact of the built environment on human health, safety, and welfare at building scales and to assess those technologies against performance objectives of projects.

ARCH 347L: Building Science and Technology III Lab

(0-4) Cr. 2.

Prereq: ARCH 346, Arch 346L; concurrent enrollment in ARCH 347.

Laboratory to accompany Arch 347 and must be taken concurrently. Integrating building technologies into architectural designs through experiments and exercises in laboratory format.

ARCH 348: Building Science and Technology IV

(Dual-listed with ARCH 548). (3-0) Cr. 3. S.

Prereq: Undergraduate: ARCH 347, Arch 347L; concurrent enrollment in ARCH 348L. Graduate: ARCH 547, ARCH 547L and ARCH 601; concurrent enrollment in ARCH 548L.

Fourth course in a sequence focused on architectural building technologies. Lectures and labs cover: ability to demonstrate active environmental HVAC control systems design, use and design of mechanical, electrical, plumbing, fire safety, transportation, and conveying systems and subsystems, constructed building assemblies and details (building envelope details for waterproofing and enclosure, advanced material properties, costs, and serviceability), and structural design for multi-story structures (design and documenting various framing patterns, integration with other building systems, and lateral stability strategies for wind and seismic) to understand the impact of the built environment on human health, safety, and welfare at building scales and to assess those technologies against performance objectives of projects.

ARCH 348L: Building Science and Technology IV Lab

(0-4) Cr. 2. S.

Prereq: ARCH 347, Arch 347L; concurrent enrollment in ARCH 348.

Laboratory to accompany Arch 348 and must be taken concurrently. Integrating building technologies into architectural designs through experiments and exercises in laboratory format.

ARCH 371: Human Behavior and Environmental Theory

(3-0) Cr. 3.

Prereq: Completion of the pre-professional program and admission into the professional program in architecture

Exploration of theories that describe social structure and order and the manner in which individuals and societies organize themselves and structure their environment.

ARCH 401: Architectural Design V

(1-15) Cr. 6. F.

Prereq: ARCH 302

Projects showing students' ability to integrate knowledge of sound building design into a comprehensive architectural proposal that reflects sustainable design principles. Consideration of site, structure, building envelope, environmental controls, life safety, and methods to measure building performance. Projects typically are closely connected to the physical, environmental, and social context of their sites.

ARCH 401H: Architectural Design V, Honors

(1-15) Cr. 6-7. F.

Prereq: ARCH 302

Projects showing students' ability to integrate knowledge of sound building design into a comprehensive architectural proposal that reflects sustainable design principles. Consideration of site, structure, building envelope, environmental controls, life safety, and methods to measure building performance. Projects typically are closely connected to the physical, environmental, and social context of their sites.

ARCH 402: Architectural Design VI

(1-15) Cr. 6. S.

Prereq: Minimum grade of C in ARCH 401.

An examination of the relationship between architecture and the city. Studio projects stress analysis and interpretation of the diverse forces and conditions that impact and inform architecture in the urban environment. Urban design project. Study abroad option.

ARCH 402H: Architectural Design VI, Honors

(1-15) Cr. 6-7. S.

Prereq: Minimum grade of C in ARCH 401.

An examination of the relationship between architecture and the city. Studio projects stress analysis and interpretation of the diverse forces and conditions that impact and inform architecture in the urban environment. Urban design project. Study abroad option.

ARCH 403: Architectural Design VII

(1-15) Cr. 6. F.

Prereq: ARCH 402

Advanced studio as incubator for examining progressive agendas within or beyond the discipline of architecture. Innovative research that is academically rigorous, critically informed, speculative, and design-led is encouraged. Projects and creative outputs vary per studio instructor.

ARCH 403H: Architectural Design VII, Honors

(1-15) Cr. 6-7. F.

Prereq: ARCH 402

Advanced studio as incubator for examining progressive agendas within or beyond the discipline of architecture. Innovative research that is academically rigorous, critically informed, speculative, and design-led is encouraged. Projects and creative outputs vary per studio instructor.

ARCH 404: Architectural Design VIII

(1-15) Cr. 6. S.

Prereq: ARCH 403

Advanced forum for architectural research and/or design. Choice of thematic studios or student initiated research and design. Experimentation and innovation are encouraged. DSN S 446 or DSN S 546, for 6 cr. each time taken, can be substituted for this class and be taken up to a maximum of 12 credits.

ARCH 404H: Architectural Design VIII, Honors

(1-15) Cr. 6-7. S.

Prereq: ARCH 403

Advanced forum for architectural research and/or design. Choice of thematic studios or student initiated research and design. Experimentation and innovation are encouraged. DSN S 446 or DSN S 546, for 6 cr. each time taken, can be substituted for this class and be taken up to a maximum of 12 credits.

ARCH 417: Big and Tall: A History of Construction

(Dual-listed with ARCH 517). (3-0) Cr. 3. Repeatable, maximum of 6 credits.

Prereq: For Arch 417, Junior or Senior Classification, for Arch 517, Graduate classification

History, theory, and principles of construction from ancient times through today. Analytic project or term paper and weekly readings with discussion questions. Credit counts toward fulfillment of History, Theory, Culture requirements.

ARCH 420: Topics in American Architecture

(3-0) Cr. 3. Repeatable, maximum of 6 credits.

Prereq: Junior classification

History, theory, and principles of American architecture and urban design considering relationships to the culture, visual arts, site, and surroundings. Credit counts toward fulfillment of History, Theory, Culture requirements. A maximum of 6 credits of ARCH 420 may be applied to degree program.

Meets U.S. Diversity Requirement

ARCH 422: Topics in Medieval Architecture

(3-0) Cr. 3. Repeatable, maximum of 6 credits.

Prereq: Junior classification

History, theory, and principles of medieval architecture and urban design considering relationships to the culture, visual arts, site, and surroundings. Credit counts toward fulfillment of History, Theory, Culture requirements. A maximum of 6 credits of ARCH 422 may be applied to degree program.

Meets International Perspectives Requirement.

ARCH 423: Topics in Renaissance to Mid-Eighteenth Century Architecture

(3-0) Cr. 3. Repeatable, maximum of 6 credits.

Prereq: Junior classification

History, theory, and principles of renaissance to mid-eighteenth century architecture and urban design considering relationships to the culture, visual arts, site, and surroundings. Credit counts toward fulfillment of History, Theory, Culture requirements. A maximum of 6 credits of ARCH 423 may be applied to degree program.

Meets International Perspectives Requirement.

ARCH 424: Topics in Nineteenth Century Architecture

(3-0) Cr. 3. Repeatable, maximum of 6 credits.

Prereq: Junior classification

History, theory, and principles of nineteenth century architecture and urban design considering relationships to the culture, visual arts, site, and surroundings. Credit counts toward fulfillment History, Theory, Culture requirements. A maximum of 6 credits of ARCH 424 may be applied to degree program.

ARCH 425: Topics in Twentieth Century and Contemporary Architecture

(3-0) Cr. 3. Repeatable, maximum of 6 credits.

Prereq: Junior classification

History, theory, and principles of twentieth century architecture and urban design considering relationships to the culture, visual arts, site, and surroundings. Credit counts toward fulfillment History, Theory, Culture requirements. A maximum of 6 credits of ARCH 425 may be applied to degree program.

ARCH 426: Topics in Native American Architecture

(Cross-listed with AM IN). (3-0) Cr. 3. Repeatable, maximum of 6 credits.

Prereq: Junior classification

History, theory, and principles of Native American/American Indian architecture, landscape architecture and planning considering relationships to the culture, visual arts, site, and surroundings. Credit counts toward fulfillment History, Theory, Culture. A maximum of 6 credits of ARCH 426 may be applied to degree program.

Meets U.S. Diversity Requirement

ARCH 427: History, Theory, and Criticism of Chinese Architecture

(Dual-listed with ARCH 527). (3-0) Cr. 3. F.

Prereq: For Arch 427, Senior classification, for Arch 527, Graduate classification

The history and theoretical concept of Chinese built environment with emphasis on the morphology of built form and its relationship to art, landscape design, and urban structure. Credit counts toward fulfillment History, Theory, Culture.

Meets International Perspectives Requirement.

ARCH 429: Topics in Italian Architecture

(3-0) Cr. 3. S.

Prereq: Junior classification

History, theory and principles of Italian architecture considering relationships to the culture, visual arts, site, and surroundings. Credit counts toward fulfillment of History, Theory, Culture requirements.

ARCH 431: Analytical Drawing

(1-6) Cr. 3. Repeatable, maximum of 12 credits. F.S.

Exploration of 2- and 3-dimensional representations. Emphasis on on-site freehand sketching, perspective and orthographic drawing, rendering of shadows and textures, and use of diverse media.

ARCH 432: Advanced Computer Lighting and Rendering

(3-0) Cr. 3. Repeatable, maximum of 6 credits.

Exploration of the computer as a design and communication tool.

Emphasis on lighting and rendering techniques.

ARCH 433: Digital Fabrication

(Dual-listed with ARCH 533). (3-0) Cr. 3. Repeatable, maximum of 6 credits. F.S.

Prereq: ARCH 433: ARCH 230; ARCH 301; Junior, Senior or equivalent skills.

ARCH 533: Graduate Classification and ARCH 601 or equivalent skills.

Exploration of the computer as a design and manufacturing tool.

Emphasis on developing digital fabrication technologies and workflows.

ARCH 434: Advanced Computer-aided Architectural Design

(1-4) Cr. 3.

Specialized investigations of the computer as a design tool. Development of computer software and workflows for architectural and environmental problem solving.

ARCH 436: Advanced Design Media

(Dual-listed with ARCH 536). (2-2) Cr. 3. Repeatable, maximum of 6 credits. F.S.

Special topics in design media applications.

ARCH 437: Architectural Photography

(3-0) Cr. 3.

Emphasis on use of the camera and lighting in photographing drawings and interior and exterior building environments.

ARCH 439: Computational Design Theory

(Dual-listed with ARCH 539). (3-0) Cr. 3.

Prereq: ARCH 220, ARCH 221, and ARCH 322 or senior classification or graduate standing.

Seminar discussion of critical readings and theories surrounding computational design; This course surveys the history and development of digital computing and its use in design from early thought experiments, to computer-aided design systems, to present day artificial intelligences and robotics. The potentials and consequences of emerging computational design systems are discussed.

ARCH 445: Building Science and Technology V

(2-0) Cr. 2. F.

Prereq: ARCH 348, ARCH 348L; concurrent enrollment in ARCH 445L.

Final course in a sequence of architectural building technology courses comprising environmental systems, materials/assembly, and building structures topics. Using both lectures and labs, the three interrelated modules each emphasize a particular building technology subject with an overall focus on synthesizing and integrating building technologies together in sustainable design strategies. Topics include: integration of active environmental control and service systems into the design of larger scale buildings, the development of construction details for building shell and interiors, and the design and analysis of various long-span structural systems. Environmental modeling and simulation to develop the ability to integrate measurable outcomes of building performance.

ARCH 445L: Building Science and Technology V Lab

(0-2) Cr. 1. F.

Prereq: ARCH 348, Arch 348L; concurrent enrollment in ARCH 445.

Laboratory to accompany Arch 445 and must be taken concurrently. Integrating building technologies into architectural designs through experiments and exercises in laboratory format.

ARCH 482: Professional Practice

(Dual-listed with ARCH 582). (3-0) Cr. 3. F.

Prereq: Junior classification and ARCH 371

Emphasis on the circumstances and opportunities of the professional practice of architecture: practice as profession, process, organization, business, and evolving models of practice.

ARCH 486: Urban Design Explorations

(3-0) Cr. 3. S.

An investigation of urban design realities in its contemporary form as part of International study abroad program in Rome. Credit counts toward fulfillment of History, Theory, Culture requirements.

ARCH 490: Independent Study

Cr. 1-9. Repeatable.

Prereq: Written approval of instructor and department chair on required form
Independent investigation.

ARCH 490A: Independent Study: Design Communications.

Cr. 1-9. Repeatable.

Prereq: Written approval of instructor and department chair on required form
Independent investigation.

ARCH 490B: Independent Study: Design

Cr. 1-9. Repeatable.

Prereq: Written approval of instructor and department chair on required form
Independent investigation.

ARCH 490C: Independent Study: Building Science and Technology

Cr. 1-9. Repeatable.

Prereq: Written approval of instructor and department chair on required form
Independent investigation.

ARCH 490D: Independent Study: Architectural History

Cr. 1-9. Repeatable.

Prereq: Written approval of instructor and department chair on required form
Independent investigation.

ARCH 490E: Independent Study: Behavioral Studies

Cr. 1-9. Repeatable.

Prereq: Written approval of instructor and department chair on required form
Independent investigation.

ARCH 490F: Independent Study: Practice

Cr. 1-9. Repeatable.

Prereq: Written approval of instructor and department chair on required form
Independent investigation.

ARCH 490H: Independent Study: Honors

Cr. 1-9. Repeatable.

Prereq: Written approval of instructor and department chair on required form
Independent investigation.

Courses primarily for graduate students, open to qualified undergraduates:

ARCH 505: Architectural Design and Media I: Mapping, Programming, Building

(0-12) Cr. 6. F.

Prereq: Admission to the M Arch program. Concurrent enrollment in ARCH 545, ARCH 545L and ARCH 595.

An introduction to comprehensive architectural design projects that focuses on three interrelated design skills: mapping, programming and building. Projects establish a framework for designing buildings that considers multiple factors such as environmental forces, construction methods, building codes, urban regulations, social relationships, and cultural values.

ARCH 506: Architectural Design and Media II: Materiality and Representation

(0-12) Cr. 6. S.

Prereq: ARCH 505, ARCH 545, ARCH 545L, ARCH 595 and concurrent enrollment in ARCH 546, ARCH 546L, and ARCH 596

Small-scale architectural design projects that investigate design representation through analogue and digital means. The projects explore different representation strategies to help students develop an understanding of the particular modes of architectural representation that advance the designer's knowledge of space as a complex interaction between materials with inherent physical characteristics, mobile socializing bodies, and changing environmental cycles.

ARCH 507: Architectural Design and Media III: Design in Detail

(0-10) Cr. 5. SS.

Prereq: ARCH 506, ARCH 546, ARCH 546L, ARCH 596 and concurrent enrollment in ARCH 581

Design projects that emphasize the multi-faceted role of the architectural detail in the design process through first, understanding the historical specificity of building construction and detailing; second, utilizing working drawing as a mode of communication; and third, designing with details.

ARCH 517: Big and Tall: A History of Construction

(Dual-listed with ARCH 417). (3-0) Cr. 3. Repeatable, maximum of 6 credits.

Prereq: For Arch 417, Junior or Senior Classification, for Arch 517, Graduate classification

History, theory, and principles of construction from ancient times through today. Analytic project or term paper and weekly readings with discussion questions. Credit counts toward fulfillment of History, Theory, Culture requirements.

ARCH 521: Celluloid Cities, Urbanism in Film

(3-0) Cr. 3.

Prereq: Junior classification

Urban theory and history as manifested in popular films and videos, both fiction and documentary. Term projects require students to make short videos. (Experience with video-making not necessary.) Credits counts towards fulfillment of History, Theory, Culture requirement.

ARCH 522: Complex Adaptive Systems Theory for the Design of Built Environments

(3-0) Cr. 3.

Prereq: Graduate or Senior Classification

The principles of complex adaptive systems theory are studied and then applied towards the design of resilient and responsive built environments. Topics cover a broad spectrum, including urban informalities, tactical approaches, the capacity of digital infrastructures to coordinate distributed human practices, and emergent phenomena. Credit counts toward fulfillment of History, Theory, Culture requirements.

ARCH 525: Meaning and Form in Architecture

(3-0) Cr. 3.

Prereq: Graduate or Senior classification

Seminar on critical analysis of meaning and form in architecture and human-made environment in various cultural contexts examined from historical and theoretical perspectives. Analytic term paper and weekly readings with discussion questions. Credit counts toward fulfillment of History, Theory, Culture requirements.

Meets International Perspectives Requirement.

ARCH 527: History, Theory, and Criticism of Chinese Architecture

(Dual-listed with ARCH 427). (3-0) Cr. 3. F.

Prereq: For Arch 427, Senior classification, for Arch 527, Graduate classification

The history and theoretical concept of Chinese built environment with emphasis on the morphology of built form and its relationship to art, landscape design, and urban structure. Credit counts toward fulfillment History, Theory, Culture.

Meets International Perspectives Requirement.

ARCH 528: Topical Studies in Architecture

(3-0) Cr. 2-3. Repeatable, maximum of 6 times.

ARCH 528A: Studies in Architecture: Culture

(3-0) Cr. 2-3. Repeatable, maximum of 6 times.

Prereq: ARCH 220, ARCH 221, ARCH 322 or senior classification or graduate standing

Topical offerings change by semester. Credit counts toward fulfillment of History, Theory, Culture requirements.

ARCH 528B: Studies in Architecture: Technology

(3-0) Cr. 2-3. Repeatable, maximum of 6 times.

ARCH 528C: Studies in Architecture: Communications

(3-0) Cr. 2-3. Repeatable, maximum of 6 times.

ARCH 528E: Studies in Architecture: Practice

(3-0) Cr. 2-3. Repeatable, maximum of 6 times.

ARCH 530: Formworks

(3-0) Cr. 3. F.S.

Studies and activities showing fabrication as a means of speculation and discourse about materiality. Focus is given to the concepts and values embedded in materials and how we build at various scales.

ARCH 531: Drawing Culture

(3-0) Cr. 3.

Prereq: ARCH 220, ARCH 221, ARCH 322 or senior classification or graduate standing

Exploration of theories and practices that center on drawing as a fundamental means of knowing.

ARCH 533: Digital Fabrication

(Dual-listed with ARCH 433). (3-0) Cr. 3. Repeatable, maximum of 6 credits. F.S.

*Prereq: ARCH 433: ARCH 230; ARCH 301; Junior, Senior or equivalent skills.**ARCH 533: Graduate Classification and ARCH 601 or equivalent skills.*

Exploration of the computer as a design and manufacturing tool.

Emphasis on developing digital fabrication technologies and workflows.

ARCH 534: Topics in Computer-aided Architectural Design

(1-4) Cr. 3. Repeatable, maximum of 6 credits. F.

Emphasis on advanced, exploratory approaches to design computing.

Projects highlight experimentation and integration of multiple media types.

ARCH 535: Advanced Three-Dimensional Studio

(1-4) Cr. 3. Repeatable, maximum of 6 credits.

Prereq: ARCH 335 or Graduate classification

Advanced investigation of sculptural expression with emphasis on individual projects.

ARCH 536: Advanced Design Media

(Dual-listed with ARCH 436). (2-2) Cr. 3. Repeatable, maximum of 6 credits. F.S.

Special topics in design media applications.

ARCH 539: Computational Design Theory

(Dual-listed with ARCH 439). (3-0) Cr. 3.

Prereq: ARCH 220, ARCH 221, and ARCH 322 or senior classification or graduate standing.

Seminar discussion of critical readings and theories surrounding computational design; This course surveys the history and development of digital computing and its use in design from early thought experiments, to computer-aided design systems, to present day artificial intelligences and robotics. The potentials and consequences of emerging computational design systems are discussed.

ARCH 540: Regimes of Perception

(3-0) Cr. 3. F.S.

Exploration of theories, methodologies, and apparatuses of projection as a spatial and material practice. Readings and discussions accompany assignments for projection through drawing, fabrication, and performance.

ARCH 545: Building Science and Technology I

(Dual-listed with ARCH 345). (2-0) Cr. 2. F.

Prereq: Undergraduate: Admission to the professional program in architecture; concurrent enrollment in ARCH 345L; graduate: Admission to the M. Arch. program and concurrent enrollment in ARCH 505 and ARCH 595; concurrent enrollment in ARCH 545L

First course in a sequence focused on architectural building technologies. Lectures and labs cover: environmental forces and systems (solar orientation, climate, daylighting, natural ventilation, human comfort and occupancy patterns), materials and assemblies (drawing conventions, building codes, and physical properties of materials) and fundamental structural principles (forces/loads, equilibrium, and stability) to understand impact of the built environment on human health, safety, and welfare at building scales.

ARCH 545L: Building Science and Technology I Lab

(0-6) Cr. 3. F.

Prereq: Admission to the M. Arch. program and concurrent enrollment in ARCH 505 and ARCH 595; concurrent enrollment in ARCH 545.

Laboratory to accompany Arch 545 and must be taken concurrently. Integrating building technologies into architectural designs through experiments and exercises in laboratory format. Readings and project presentations.

ARCH 546: Building Science and Technology II

(Dual-listed with ARCH 346). (3-0) Cr. 3. S.

Prereq: Undergraduate: ARCH 345, ARCH 345L, MATH 145, and PHYS 131 and 131L; concurrent enrollment in ARCH 346L. Graduate: ARCH 505, ARCH 545, ARCH 545L, and ARCH 595; concurrent enrollment in ARCH 506, ARCH 546L and ARCH 596.

Second course in a sequence focused on architectural building technologies. Lectures and labs cover: environmental systems (heat transfer in the building envelope, passive heating and cooling, daylighting, thermal comfort, analytical guidelines and building energy calculation methods), materials & assemblies (building envelope systems, accessibility, egress, and material properties), and structural systems (structural system selection/comparison, and design and analysis of "form-active" compression and tension structures) to understand impact of the built environment on human health, safety, and welfare at building scales.

ARCH 546L: Building Science and Technology II Lab

(0-4) Cr. 2. S.

Prereq: ARCH 345, ARCH 345L, MATH 145 and PHYS 131 131L; concurrent enrollment in ARCH 546.

Laboratory to accompany Arch 546 and must be taken concurrently. Integrating building technologies into architectural designs through experiments and exercises in laboratory format.

ARCH 547: Building Science and Technology III

(Dual-listed with ARCH 347). (3-0) Cr. 3. F.

Prereq: Undergraduate: ARCH 346, Arch 346L; concurrent enrollment in ARCH 347L. Graduate: ARCH 506, ARCH 546, ARCH 546L, and ARCH 596 or advanced standing in the M.Arch program; concurrent enrollment in ARCH 601 and ARCH 547L.

Third course in a sequence focused on architectural building technologies. Lectures and labs cover: multistory building framing, assembly, and enclosure systems, sizing and selecting structural framing components (foundations, columns, beams, etc.), and an environmental design process that demonstrates the ability to integrate climate into the control of thermal, luminous, ventilative and acoustic environments. Introduction to plumbing and rain water collection systems to understand the impact of the built environment on human health, safety, and welfare at building scales and to assess those technologies against performance objectives of projects.

ARCH 547L: Building Science and Technology III Lab

(0-2) Cr. 1. F.

Prereq: ARCH 506, ARCH 546, ARCH 546L, and ARCH 596 or advanced standing in the M.Arch program; concurrent enrollment in ARCH 547 and ARCH 601.

Laboratory to accompany Arch 547 and must be taken concurrently. Integrating building technologies into architectural designs through experiments and exercises in laboratory format.

ARCH 548: Building Science and Technology IV

(Dual-listed with ARCH 348). (3-0) Cr. 3. S.

Prereq: Undergraduate: ARCH 347, Arch 347L; concurrent enrollment in ARCH 348L. Graduate: ARCH 547, ARCH 547L and ARCH 601; concurrent enrollment in ARCH 548L.

Fourth course in a sequence focused on architectural building technologies. Lectures and labs cover: ability to demonstrate active environmental HVAC control systems design, use and design of mechanical, electrical, plumbing, fire safety, transportation, and conveying systems and subsystems, constructed building assemblies and details (building envelope details for waterproofing and enclosure, advanced material properties, costs, and serviceability), and structural design for multi-story structures (design and documenting various framing patterns, integration with other building systems, and lateral stability strategies for wind and seismic) to understand the impact of the built environment on human health, safety, and welfare at building scales and to assess those technologies against performance objectives of projects.

ARCH 548L: Building Science and Technology IV Lab

(0-2) Cr. 1. S.

Prereq: ARCH 547, ARCH 547L and ARCH 601; concurrent enrollment in ARCH 548.

Laboratory to accompany Arch 548 and must be taken concurrently. Integrating building technologies into architectural designs through experiments and exercises in laboratory format.

ARCH 558: Sustainability and Green Architecture

(3-0) Cr. 3.

Prereq: Graduate or Senior classification

Issues of sustainability as related to living patterns and city design, population, pollution and use and availability of natural resources for the built environment. Issues of green and sustainable architecture as related to critical thinking about methods of building material selection and systems, the environment of the United States and the world, and examples of green or sustainable building designs.

ARCH 567: Preservation, Restoration, Rehabilitation, Cultural Heritage, and Technology

(3-0) Cr. 3.

Prereq: Senior classification

Standards and procedures—including the use of current digital technologies—for preserving, restoring, reconstructing, and rehabilitating existing buildings following the guidelines of the National Park Service and the National Trust for Historic Preservation. Credit counts toward fulfillment of History, Theory, Culture requirements.

ARCH 568: Historic Preservation

(3-0) Cr. 3. F.

Prereq: Senior classification

The history and theory of the Historic Preservation movement including an overview of the National Trust for Historic Preservation; the National Register of the Historic Places; the National Park Service; federal programs, funding sources, preservation law, national landmarks, and historic districts. Credit counts toward fulfillment of History, Theory, Culture requirements.

ARCH 571: Design for All People

(Cross-listed with GERON). (3-0) Cr. 3. S.

Prereq: Graduate or Senior classification

Principles and procedures of inclusive design in response to the varying ability level of users. Assessment and analysis of existing buildings and sites with respect to standards and details of accessibility for all people, including visually impaired, mentally impaired, and mobility restricted users. Design is neither a prerequisite nor a required part of the course. Enrollment open to students majoring in related disciplines. Credit counts toward fulfillment of History, Theory, Culture requirements. Meets U.S. Diversity Requirement

ARCH 575: Contemporary Urban Design Theory

(3-0) Cr. 3.

Prereq: Graduate or Senior classification

Current urban design theory and its application to urban problems. Credit counts toward fulfillment of History, Theory, Culture requirements.

ARCH 576: Study Abroad Options

Cr. 1-12. Repeatable, maximum of 12 credits. SS.

Special topics in environmental design, architectural history and contemporary practice. Travel to relevant countries. General cultural and historical studies, topical projects and individual inquiry. Courses may be taught by departmental faculty or faculty from approved Iowa State Study Abroad programs. See current offerings for detailed syllabus.

Meets International Perspectives Requirement.

ARCH 581: Making and Material Practice

(1-12) Cr. 5. SS.

Prereq: ARCH 506, ARCH 546, ARCH 546L, and ARCH 596

Planning and execution of a project serving a community need. Learning occurs through both theory and active involvement in on-site work. Projects connect previous coursework to practical applications and community involvement.

ARCH 582: Professional Practice

(Dual-listed with ARCH 482). (3-0) Cr. 3. F.

Prereq: Junior classification and ARCH 371

Emphasis on the circumstances and opportunities of the professional practice of architecture: practice as profession, process, organization, business, and evolving models of practice.

ARCH 590: Special Topics

Cr. 1-5. Repeatable.

Prereq: Written approval of instructor and department chair on approved form
Investigation of architectural issues having a specialized nature.

ARCH 595: Seminar on the Built Environment I: History

(3-0) Cr. 3. F.

Prereq: Admission to the M. Arch. program and concurrent enrollment in ARCH 505, ARCH 545, and ARCH 545L

Introduction to historical canons and traditions of architecture and urbanism. Discussion of the relationship between historical inquiry and contemporary practice. Students learn skills in critical thinking, visual analysis, and research methods. Course sessions develop thematically with interdisciplinary readings, group discussions, student presentations, and research projects.

ARCH 596: Seminar on the Built Environment II: Landscape and Society

(3-0) Cr. 3. S.

Prereq: ARCH 505, ARCH 545, ARCH 545L, ARCH 595 and concurrent enrollment in ARCH 506, ARCH 546, and ARCH 546L

Introduction to landscape as artifact and multi-disciplinary knowledge-base for design thinking. Literatures and methods of environmental psychology, cultural geography, landscape and architectural history and theory, site and circulation design as intersection of built infrastructural, natural, and social systems. Emphasis on sensory perception, and human movement; investigations of climate, environmental conditions, and values toward consumption and sustainability in everyday experience of the built environment.

ARCH 597: Seminar on the Built Environment III: Theory

(3-0) Cr. 3. F.

Prereq: Graduate or Senior classification

Multidisciplinary overview of contemporary theories concerned with the production of the built environment. Particular attention to urbanism as a discourse that relates social interactions and power structures to material space. Credit counts toward fulfillment of History, Theory, Culture requirements.

Meets International Perspectives Requirement.

ARCH 598: Seminar on the Built Environment IV: Topical Study

(3-0) Cr. 3. S.

Prereq: Graduate or Senior classification

A research seminar which considers a topic within contemporary discourses on the built environment outside of Europe and North America. The topic will be studied from multiple perspectives highlighting the historical and theoretical relationships between architecture, global cultures, geography, landscape, and urban planning. Credit counts toward fulfillment History, Theory, Culture requirements.

Courses for graduate students:**ARCH 601: Sustainable Building Design**

(0-12) Cr. 6. F.

Prereq: ARCH 507, ARCH 546, ARCH 546L, and ARCH 596 and concurrent enrollment in ARCH 547 and ARCH 547L

Design projects that are developed through integrative design strategies that explore the relationship between buildings and environmental forces to maximize non-wasteful, efficient use of resources such as energy, water and building materials. Projects will include investigations of the impact of solar energy, airflow, building materials, passive and active systems and wall sections on spatial quality and form making while demonstrating synthesis of user requirements, regulatory requirements, site conditions, and accessible design. Design decisions will be quantitatively validated through energy modeling and performance simulation.

ARCH 602: Communities, Architecture and the Environment

(0-12) Cr. 6. S.

Prereq: ARCH 601, ARCH 547 ARCH 547L, ARCH 597 and concurrent enrollment in ARCH 548 ARCH 548L

Design projects that explore the relationships between architectural, cultural, and environmental landscapes. Emphasis on regional sites, socio-economic conditions, and sustainable design and planning practices at multiple scales. Projects stress engagement with local circumstances and stakeholders; systemic interconnections and strategies; and the application of interdisciplinary research.

ARCH 603: Integrative Design

(0-12) Cr. 6. F.

Prereq: ARCH 602, ARCH 548 ARCH 548L

Rigorous examination of architecture's relationship with culture and technology. Studio projects stress the interpretation of contextual and historical considerations while demonstrating broad integration and consideration of environmental stewardship, technical documentation, accessibility, site conditions, life safety, environmental systems, structural systems, and building envelope systems and assemblies. This course fulfills the Graduate College Creative Component Requirement.

ARCH 604: Design Studio Options

(0-12) Cr. 6. Repeatable, maximum of 12 credits. S.

Prereq: ARCH 602

Design studio selected by the students, which may include but is not limited to: independent design study, interdisciplinary design studio, study abroad, and design build. DSN S 546 for 6 cr. may be substituted for this course.

ARCH 690: Independent Design Study

(1-15) Cr. 6. Repeatable.

Prereq: Admission to the M. S. in Arch. program

Independent architectural design projects commensurate with student interests requiring approval of Architecture Graduate Committee.

ARCH 698: Graduate Seminar

Cr. R. Repeatable. F.S.

Prereq: Admission to the M. Arch. or M. S. in Arch. programs

Special topics and guest speakers.

ARCH 699: Research

(1-18) Cr. 3-9. Repeatable.

Research.