

Course Catalog - Spring 2006

Architecture

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.

171 **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.

199 **Undergraduate Open Seminar** Credit: 1 to 5 hours.

May be repeated.

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.

215 **Buildings, Land and Culture** Credit: 3 hours.

Same as LA 215. See LA 215.

This course satisfies the General Education Criteria for a Western Comparty Cult course.

231 **Anatomy of Buildings** Credit: 4 hours.

Introduction to building technology, materials and methods emphasizing integration of design and technology. Introduces buildings as a network of systems including space, structure and environmental controls operating within a larger context of environment and social function. Skills developed include analysis of building form and function, understanding of design/technology interrelationships, and communication of ideas through drawing. Prerequisite: ARCH 171.

232 **Construction of Buildings** Credit: 4 hours.

Second course in building science and technology with emphases on the process of project execution from the initiation of design to the completion of construction. Includes comprehensive study of the construction of buildings and their systems, materials and methods, and their implications on building sustainability and design decision-making. Prerequisite: ARCH 231 or consent of instructor.

272 **Strategies of Arch Design** Credit: 4 hours.

Integration of formal principles with functional fundamentals of architectural design; functional vocabulary, principles, and concepts of architectural design; introduction to precedent study and analysis; skills development in sketching, drafting, rendering, layout, and modeling; and creative problem-solving in 2- and 3-dimensional exercises. Prerequisite: ARCH 101 and ARCH 171.

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.

314 **History of World Landscapes** Credit: 3 hours.

Same as LA 314. See LA 314.

This course satisfies the General Education Criteria for a Hist&Philosoph Perspect, and Western Comparty Cult course.

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 the 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.

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.

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.

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

373 *Arch Design and the Landscape* Credit: 5 hours.

The building 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.

374 *Arch Design and the City* Credit: 5 hours.

Building 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.

399 *Study in Versailles, France* Credit: 0 hours.

Study in the University of Illinois Architectural Program at Versailles, France. Approved for S/U grading only. Prerequisite: Concurrent registration in the full-time program at Versailles through the Chicago or Urbana-Champaign Campus.

400 *Senior Honors in Architecture* Credit: 1 to 3 hours.

For candidates for honors in architecture. Independent guided study and research in a selected area of architecture. 3 undergraduate hours. No graduate credit. (Summer session, 1 to 3 undergraduate hours). 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.

401 *Independent Study* Credit: 0 to 4 hours.

Independent guided study and investigation in a selected area of architecture. 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.

409 *Great Modern Architects* Credit: 3 hours.

Seminar on selected topics addressing the philosophy, theory, personality, and work of significant architects since the mid-nineteenth century. Prerequisite: ARCH 210

410 *Ancient Architecture* Credit: 3 hours.

Architecture and urban design in ancient Egypt, Greece, and Rome. Prerequisite: ARCH 210, ARTH 111, or consent of instructor.

411 *Early Byzantine Arch* Credit: 3 hours.

ARCH and urban design of the early Christian era, the Byzantine Empire, southeastern European lands under Byzantine cultural influence, and medieval Russia; from circa 300 to circa 1500. Prerequisite: ARCH 210, ARTH 111, or consent of instructor.

412 Medieval Architecture Credit: 3 hours.

The development of Romanesque and Gothic architecture and urban design. Prerequisite: ARCH 210, ARTH 111, or consent of instructor.

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. Prerequisite: ARCH 210, ARTH 112, or consent of instructor.

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. Prerequisite: ARCH 210, ARTH 112, or consent of instructor.

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. Prerequisite: ARCH 210 or ARTH 112, or consent of instructor.

416 Modern American Architecture Credit: 3 hours.

Development of American architecture and urban planning from the seventeenth century to the present. Prerequisite: ARCH 210, ARTH 112, or consent of instructor.

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. Prerequisite: ARCH 210 or ARTH 112, or consent of instructor.

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.

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.

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. Prerequisite: Consent of instructor.

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. Prerequisite: Junior standing or consent of instructor.

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. Prerequisite: ARCH 352.

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. Prerequisite: ARCH 352.

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. Prerequisite: Limited graduate standing in Architecture (Track 3 Program).

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. Prerequisite: ARCH 471

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. Prerequisite: ARCH 374 or ARCH 472.

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. Prerequisite: ARCH 475.

480 *Sustainable Design Principles* Credit: 2 hours.

Introduction to key concepts for the design sustainable of buildings and landscapes, including concepts that form the core of the U.S Green Building Council rating system (LEED). Introduction to LEED accreditation.

498 *Directed Research in Arch* Credit: 4 hours.

Participation in on-going research projects which may include energy management, environmental perception, facilities development, building science, and other topics. May be repeated to a maximum of 8 hours. Students may register in different sections of this course to a maximum of 8 hours. Prerequisite: Approval of written proposal by instructor and Director of School.

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. Prerequisite: Senior or graduate standing in architecture and approval of program prior to registration.

501 *Architectural Practice* Credit: 4 hours.

Role of the architect in the building enterprise, professional ethics, and the conduct of professional practice; legal aspects of architectural practice and building construction; introduction of business management, marketing, operational procedures, financial planning, and cost control of architectural practices; and the administration of construction contracts. Prerequisite: Graduate standing or consent of instructor.

502 *Structural Planning* Credit: 4 hours.

General problems in the selection and design of structural systems for buildings; methods of analysis; site explorations, soils, and foundations; bracing; and special systems. Prerequisite: ARCH 451 and ARCH 452

510 *History of World Landscapes* Credit: 4 hours.

Same as LA 513. See LA 513.

511 *Sem in Ancient & Medieval Arch* Credit: 4 hours.

Seminar on topics in ancient, early Christian, Byzantine, and Medieval Architecture. Prerequisite: ARCH 410, ARCH 411, or ARCH 412, or equivalent as determined by the instructor.

513 *Sem in Ren & Baroque Arch* Credit: 4 hours.

Seminar on topics in European architecture from the fifteenth through the eighteenth centuries. Prerequisite: ARCH 413 and ARCH 414, or equivalent as determined by the instructor.

515 Arch Hist of Amer Communities Credit: 2 or 4 hours.

Advanced historic study of the architectural design and aesthetics of individual buildings and their relationship to each other in selected small-scale American communities. Prerequisite: ARCH 416 or equivalent, and consent of instructor.

517 Develop of Cont Arch Thought Credit: 4 hours.

Examination of the development of the philosophy of significant modern and contemporary architectural writers and architects in relation to their projects and executed work. Prerequisite: ARCH 415 and ARCH 416, or equivalent as determined by the instructor.

518 Recording Historic Buildings Credit: 3 hours.

Examines techniques for recording historic buildings and sites: measuring, photographing, and drawing to Historic American Building Survey standards; taking field notes and investigating public records to document reports. Prerequisite: ARCH 419 and demonstrated ability in architectural graphics; or consent of instructor.

519 Conserv of Building Materials Credit: 3 or 4 hours.

Examination, analysis, and pathologies of building materials and techniques for treatment and repair of historic buildings. Emphasis is on conservation of traditional masonry, concrete, and metals. Field trips and lab work. To receive 4 hours credit, students must participate in lab. Prerequisite: ARCH 419.

530 Management in Architecture Credit: 4 hours.

Study of management and business administration topics relevant to the architecture profession. The application of: marketing, ethics, accounting, organizational behavior, quantitative analysis, finance, operations, economics, and strategic planning to the field of architecture. Management and economic issues that influence and motivate commercial, industrial, institutional, and individual clients are addressed. Prerequisite: Graduate standing in Architecture

534 Building Economics Credit: 4 hours.

Study of factors affecting cost of building including: the building market, construction cost, estimates and cost control, time value of money and building life-cycle cost, measuring the worth of investments, depreciation and tax consideration of cash-flows. Prerequisite: Graduate standing or consent of instructor

538 Econ Issues in Arch Develop Credit: 4 or 6 hours.

Individual and team analysis of architectural development proposals addressing relevant economic topics and trends. Proposals are analyzed for development, construction, finance, operation, and sale costs. Potential and projected rate of return on investment is established for specific time periods. Economic and social forces impacting upon real estate values are examined. Prerequisite: ARCH 501, ARCH 530, and ARCH 534; or consent of instructor.

544 Bldg Sys & Design Integration Credit: 3 or 4 hours.

Advanced course on building design for greater performance, including the study of: the anatomical and functional variations of building subsystems and their design implications; inter-system relationships and synergistic integration of building subsystems into the overall building; and the strategies for designing buildings of high functional performance and greater overall value. (Day-long Friday field trips and lab fee). Term paper is required for 4 hours credit. Prerequisite: Graduate standing in Architecture or consent of instructor.

545 Design & Constructability Credit: 3 or 4 hours.

Advanced course on building design for greater constructability, including material alternatives and their architectural, performance, and construction implications; the implications of the specifics of design on the range of applicable construction methods, and therefore, on construction productivity and economy; and the strategies for designing buildings of high constructability and greater overall value. (Day-long Friday field trips and lab fee). Term paper is required for 4 hours credit. Prerequisite: ARCH 544 or consent of instructor.

546 Programming & Concept Studio Credit: 6 hours.

An advanced course on programming architectural projects and developing design concepts to best meet the project goals and maximize value creation. Investigation of relevant issues and appropriate methods of

programming and concept development are followed by programming and design exercises. The specific contents include: theories and methods of programming; general program requirements and exemplary design responses for selected major building types; testing of the viability of selected model programs through exploration of appropriate design responses; further enhancement of the subject programs in light of such explorations; and investigation and development of philosophically sound and operationally efficient methods of programming and design. This course may not be repeated for credit. Prerequisite: Graduate standing in architecture and consent of instructor.

547 Architectural Practice Studio Credit: 8 hours.

Comprehensive building design with emphasis on holistic design integration for optimum performance and constructability with best possible economy under the realistic temporal, technical, legal, and budgetary limitations. The projects, typically real ones, are executed through partial construction document phase through collaborative design by project teams. (Day-long Friday field trips). Prerequisite: ARCH 534, ARCH 545, and ARCH 546; or consent of instructor.

548 Const Execution & Admin Credit: 4 hours.

Advanced course in construction with emphasis on acquiring knowledge and developing skills for successful project execution in a real-time project with numerous variables affecting the project outcome, including: devising methods and strategies for effective project execution; making decisions that can steer the project to the best possible direction; and skillfully mediating disputes and conflicts that might arise. For this purpose, on-going major construction projects are used as Learning Laboratories. May be repeated to a maximum of 8 hours. (Summer I credit: 1 graduate hour and Summer II credit: 2 graduate hours). Prerequisite: ARCH 501 and ARCH 545; or consent of instructor.

550 Reinforced Concrete Design Credit: 4 hours.

Selection, design, and comparison of reinforced concrete floor systems for buildings; study and design of columns and footings; and prestressed concrete. Prerequisite: ARCH 452

551 Structural Analysis Credit: 4 hours.

Advanced problems in the analysis of statically determinate structures; general theories and methods of analysis of statically indeterminate structures by geometric and energy methods; and introduction to theory of plastic design. Prerequisite: ARCH 451 and ARCH 452.

552 Foundation Engineering Credit: 4 hours.

Soil mechanics and site exploration; design of spread footings, combined footings, piles, and caissons; and foundation walls and retaining walls in reinforced concrete. Prerequisite: ARCH 551 or consent of instructor.

553 Adv Reinforced Concrete Design Credit: 4 hours.

Critical review of the analysis, methods, and specifications involved in the design and behavior of reinforced concrete structures for buildings, including tall buildings, plates, and shells; computer applications. Prerequisite: ARCH 551; credit or concurrent registration in ARCH 560 or consent of instructor.

554 Adv Steel Design Credit: 4 hours.

Advanced topics in the design of steel structures; critical study of the AISC specification; design of steel members and their connections; composite structures; and the analysis and design of continuous structures and tall buildings. Prerequisite: ARCH 560 or consent of instructor.

555 Prestressed Concrete Design Credit: 4 hours.

Theory and design of prestressed concrete structures; and suspension shell structures. Prerequisite: ARCH 553 or consent of instructor.

556 Advanced Structural Planning Credit: 4 hours.

Study of the loads, functional and spatial requirements, and construction problems in the selection and design of structural systems for buildings; cost estimates; and integration of mechanical and electrical equipment. Prerequisite: ARCH 552 and ARCH 553; credit or concurrent registration in ARCH 554 and ARCH 555, or consent of instructor.

557 Soil Mechanics Credit: 4 hours.

Classification of soils; hydraulic properties and flow of water; strength and deformation properties; consolidation of soil and settlement analysis; soil exploration; bearing capacity of soils; lateral earth pressure theory; introduction to foundations. Prerequisite: ARCH 452.

558 Structural Wood Design Credit: 4 hours.

Analysis and design of wood structures for buildings; response of wood buildings to gravity and lateral loads; design of structural elements: beams, columns, beam-columns, members in tension, and trusses using NDS specifications; connections; plywood panels; diaphragms and shear walls. Prerequisite: ARCH 451 or equivalent.

559 Structural Masonry Design Credit: 4 hours.

Engineering properties of masonry materials; codes and standards for masonry structures; analysis and design of masonry structures including multistory buildings and arches. Prerequisite: ARCH 452 or equivalent.

560 Advanced Structural Analysis Credit: 4 hours.

Advanced theory and analysis of statically indeterminate structures, recognizing effects due to temperature, settlement, and fabrication errors; matrix methods focusing on computer analysis techniques; introduction to plastic analysis and design. Prerequisite: ARCH 551.

563 Soc/Beh Research Designed Env Credit: 4 hours.

Introduction to methods and techniques of systematically generating social and behavioral information relevant to the programming, design, and evaluation of physical environments. Same as LA 563. Prerequisite: Graduate standing in architecture, landscape architecture, or urban and regional planning.

564 Behavioral Research in Design Credit: 4 hours.

Same as LA 564. See LA 564.

565 Design/Behavior Studio Credit: 6 hours.

Same as LA 565. See LA 565.

571 Architectural Design Studio Credit: 6 hours.

Design studies of intermediate size building types; planned communities; civic and social facilities at the community and urban scale; and collaboration among the several disciplines involved in planning the human habitat: urban planning, landscape architecture, sociology, and economics. Prerequisite: ARCH 476.

572 Architectural Design Studio Credit: 6 hours.

Research and individual comprehensive design study for a selected architectural project; special emphasis on site development and the integration of construction technology, structure, and environmental systems. Prerequisite: ARCH 571, or consent of instructor.

573 Architectural Design Studio Credit: 4 to 8 hours.

Definitive design thesis focusing on design issues and various building types with optional choices related to the student's particular interests, talents, and capacities. Prerequisite: ARCH 572 or consent of instructor.

574 Architectural Design Studio Credit: 4 to 8 hours.

Continuation of ARCH 573. Prerequisite: ARCH 573 or consent of instructor.

576 Architectural Design Seminar Credit: 3 or 4 hours.

Presentations and discussions relative to various areas of architectural and environmental design concerns. May be repeated to a maximum of 12 hours. Prerequisite: ARCH 572 or consent of instructor.

577 Theory of Architecture Credit: 3 or 4 hours.

Review of principles of architectural design; factors in programming architectural requirements; design development; and evaluation and criticism. Prerequisite: ARCH 572 or consent of instructor.

580 Adv Sustainability Principles Credit: 2 hours.

In depth examination of how concepts introduced in ARCH 480 lead to design of sustainable buildings and landscapes. Uses the LEED framework for assessing building performance and meeting sustainability goals. Examines the scientific standards LEED uses to emphasize state of the art strategies for sustainable site development, water savings, energy efficiency, materials selection and indoor environmental quality. Prerequisite: ARCH 480 or concurrent enrollment in ARCH 480.

588 *Urban Design Seminar* Credit: 3 to 4 hours.

Analysis and criticism of urban development projects; individual reports and discussions. Prerequisite: ARCH 572, UP 426, or consent of instructor

591 *Spec Prob Arch Hist & Pres* Credit: 2 to 12 hours.

Individual investigation of the work of particular architects, of specific buildings, and of the architecture of periods or regions; comparative studies; and aesthetic problems. May be repeated to a maximum of 12 hours. Prerequisite: Twelve hours of architectural history or consent of instructor.

593 *Spec Prob Arch Practice & Mgt* Credit: 1 to 12 hours.

In-depth investigation of emerging issues and specific areas of research interest beyond what is covered in graduate courses of regular offering in the area of architectural practice and management. Students, as individuals or in groups, are expected to propose a research plan and methods for a specific topic of research interest in consultation with the instructor, and execute it under the guidance of the instructor through consultation on a regular basis. (Summer credit: 1 to 6 graduate hours). May be repeated in same and subsequent terms as topics vary to a maximum of 12 hours. Prerequisite: Advanced graduate standing and consent of instructor.

594 *Spec Prob Building Sci & Tech* Credit: 1 to 12 hours.

In-depth investigation of emerging issues and specific areas of research interest beyond what is covered in graduate courses of regular offering in the area of building science technology. Students, as individuals or in groups, are expected to propose a research plan and methods for a specific topic of research interest in consultation with the instructor, and execute it under the guidance of the instructor through consultation on a regular basis. May be repeated to a maximum of 12 hours. (Summer credit: 1 to 2 graduate hours). Prerequisite: Advanced graduate standing and consent of instructor.

595 *Spec Prob Struct Theory & Des* Credit: 2 to 12 hours.

Individual or group investigation and study in architectural engineering application; research in economy and design in correlation with architectural, mechanical, and structural requirements. May be repeated to a maximum of 12 hours. Prerequisite: Consent of instructor.

596 *Spec Prob Housing Env* Credit: 3 to 6 hours.

Individual investigation or research in housing environments involving special issues such as energy conscious design, human-environmental relations, aesthetic theory, government policy, and cultural patterns. May be repeated to a maximum of 12 hours. Prerequisite: ARCH 572 or consent of instructor

597 *Spec Prob Arch Design* Credit: 3 to 12 hours.

Individual investigation of building types and systems, aesthetic theories, design thesis programming and other problems in architectural design. May be repeated to a maximum of 16 hours. Prerequisite: ARCH 572 or consent of instructor

599 *Thesis Research* Credit: 0 to 16 hours.

May be repeated to a maximum of 16 hours. Approved for S/U grading only. Prerequisite: Consent of instructor and graduate program coordinator.