

Course Catalog - Fall 2004

Architecture

171 **Principles of Arch Design** Credit: 3 hours.

(ARCH 171) Formal fundamentals of architectural design; formal vocabulary, principles, and concepts of architectural design; basic design methods; visualization and analysis of 3D space; skills development in sketching, drafting, rendering, layout, diagramming, modeling, -; and creative problem-solving in two- and three-dimensional exercises.

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

(ARCH 199) May be repeated.

210 **Intro to the Hist of Arch** Credit: 3 hours.

(ARCH 210) 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.

(ARCH 215) Same as LA 215. See LA 215.

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

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

(ARCH 231) First course in building science and technology with emphases on the anatomy of buildings, including the function, the physical makeup and the working principles of various building systems, components, and materials, their interrelationships and their building design implications. Prerequisite: Sophomore standing or consent of instructor.

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

(ARCH 232) 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: 3 hours.

(ARCH 172) Integration of formal with functional fundamentals of architectural design; functional vocabulary, principles, and concepts of architectural design; introduction to precedent study and analysis; basic design and programming methods; skills development in drafting, modeling, layout, rendering, and sketching; and creative problem-solving in two- and three-dimensional exercises. Prerequisite: ARCH 171.

300 **Ind Studies in Urban Design** Credit: 3 hours.

(ARCH 300) 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&Philosophy Perspect, and Western Compartment Cult course.

341 **Environment Tech HVAC** Credit: 4 hours.

(ARCH 241) 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.

(ARCH 242) 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.

(ARCH 251) 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.

(ARCH 252) 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 & the Landscape Credit: 3 hours.

(ARCH 271) The building in - a landscape setting; creation of place; -schematic building design and site planning theory issues, including accessibility; principles of energy efficient building design; human/landscape relationship issues; and architectural design and presentation methods. Prerequisite: ARCH 272.

374 Arch Design & the City Credit: 3 hours.

(ARCH 272) Buildings in an urban setting; creation of place; introductory urban design and site planning issues, including accessibility; human-built environment relationships issues; and architectural design and presentation methods. Prerequisite: ARCH 373

399 Study in Versailles, France Credit: 0 hours.

(ARCH 299) Study in the University of Illinois Architectural Program at Versailles, France. 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.

(ARCH 200) 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.

(ARCH 301) Independent guided study and investigation in a selected area of architecture. May be repeated. Prerequisite: Junior standing in architecture, written proposal approved by sponsoring faculty member and the Directory of the School.

409 Great Modern Architects Credit: 3 hours.

(ARCH 309) 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.

(ARCH 310) 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 311) 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.

(ARCH 312) 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.

(ARCH 313) 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.

(ARCH 314) 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.

(ARCH 315) 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.

(ARCH 316) 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.

(ARCH 317) 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.

(ARCH 318) 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.

(ARCH 319) 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.

(ARCH 323) 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.

(ARCH 324) 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.

(ARCH 351) 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.

(ARCH 352) 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.

475 Arch Design & Development Credit: 6 hours.

(ARCH 371) Intermediate building and environmental design; issue-oriented building problems; urban design theory; intermediate building design and site planning theory; human-environment relationships theory; and architectural design and presentation methods. 6 undergraduate hours. No graduate credit. Prerequisite: ARCH 374.

476 Arch Design & Exploration Credit: 6 hours.

(ARCH 372) Schematic design, design development, and construction documents of a small scale (10,000 square feet) public building emphasizing the integration of the basic elements of building, structural, and environmental technologies. 6 undergraduate hours. No graduate credit. Prerequisite: ARCH 475; credit or concurrent registration in ARCH 341 and 342.

498 Directed Research in Arch Credit: 4 hours.

(ARCH 398) 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.

(ARCH 399) 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.

(ARCH 330) 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.

(ARCH 354) 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 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.

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

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

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

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

(ARCH 415) 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.

(ARCH 417) 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 416,

or equivalent as determined by the instructor.

518 Recording Historic Building Credit: 3 hours.

(ARCH 418) 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 Consev of Building Materials Credit: 3 or 4 hours.

(ARCH 419) 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.

(ARCH 430) 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.

(ARCH 434) 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.

(ARCH 438) 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, 530, and 534; or consent of instructor.

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

(ARCH 444) 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.

(ARCH 445) 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.

547 Architectural Practice Studio Credit: 8 hours.

(ARCH 447) 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 and 545; or consent of instructor.

548 Const Execution & Admin Credit: 4 hours.

(ARCH 448) 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 545; or consent of instructor.

550 Reinforced Concrete Design Credit: 4 hours.

(ARCH 353) 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.

(ARCH 355) 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 452.

552 Foundation Engineering Credit: 4 hours.

(ARCH 452) 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.

(ARCH 453) 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.

(ARCH 454) 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.

(ARCH 455) 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.

(ARCH 456) 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 553; credit or concurrent registration in ARCH 554 and 555, or consent of instructor.

557 Soil Mechanics Credit: 4 hours.

(ARCH 457) 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.

(ARCH 458) 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.

(ARCH 459) 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.

(ARCH 451) 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.

(ARCH 463) 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.

(ARCH 464) Same as LA 564. See LA 564.

565 Design/Behavior Studio Credit: 6 hours.

(ARCH 465) Same as LA 565. See LA 565.

571 Architectural Design Studio Credit: 6 hours.

(ARCH 373) 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.

(ARCH 374) 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.

(ARCH 471) 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.

(ARCH 472) Continuation of ARCH 573. Prerequisite: ARCH 573 or consent of instructor.

576 Architectural Design Seminar Credit: 3 or 4 hours.

(ARCH 476) 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.

(ARCH 477) Review of principles of architectural design; factors in programming architectural requirements; design development; and evaluation and criticism. Prerequisite: ARCH 572 or consent of instructor.

588 Urban Design Seminar Credit: 3 to 4 hours.

(ARCH 488) 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.

(ARCH 491) 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.

(ARCH 493) 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.

(ARCH 494) 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.

(ARCH 495) 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.

(ARCH 496) 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.

(ARCH 497) 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.

(ARCH 499) May be repeated to a maximum of 16 hours. Approved for S/U grading only. Prerequisite: Consent of instructor and graduate program coordinator.