ARCH - Architecture (ARCH)

ARCH 205 Architecture Design I
Credits 4. 1 Lecture Hour. 9 Lab Hours.
Issues and methods in designing environments for human habitation and well-being; projects addressing site, functional planning, spatial ordering, form generation through a recognition of the synthesis of space, structure, use and context; reinforcement of appropriate graphic and model building techniques.
Prerequisites: ENDS 105, ENDS 108, ENDS 115.

ARCH 206 Architecture Design II
Credits 5. 2 Lecture Hours. 9 Lab Hours.
Fundamental issues of innovative design processes and creation explored through the creative use of past, present and future materials, tools, and technologies; with an emphasis upon the research of materials, methods, scale, craft and technique as instruments of design, fabrication, and production.
Prerequisites: ARCH 205; ENDS 105, ENDS 108, ENDS 115.

ARCH 207 Architecture Design II
Credits 5. 2 Lecture Hours. 9 Lab Hours.
Technology as medium for design planning and communication; impact and influence of technology on architectural design process; investigation of computing theories, systems, methods and current and future trends through creative thinking and innovation design, problem solving and creation with the use of digital media.
Prerequisites: ARCH 205 and ENDS 105, ENDS 106, ENDS 115, ENDS 116.

ARCH 212 Social and Behavioral Factors in Design
Credits 3. 3 Lecture Hours.
Social and behavioral factors in the built and natural environment; environmental perception and spatial cognition; social-environmental processes such as privacy and crowding; setting-oriented discussion on residences, education, and the workplace; the psychology of nature and natural resource management; social design and social science contribution to architectural design.

ARCH 213 Sustainable Architecture
Credits 3. 3 Lecture Hours.
A comprehensive introduction to sustainability concepts, techniques and applications at all levels of the built environment, history of contemporary development of sustainable architecture from 1960 to the present; design strategies, environmental technologies and social factors for reducing building energy needs and carbon footprints; global applications of sustainable approaches.

ARCH 216 Computational Methods in Architecture
Credits 3. 2 Lecture Hours. 2 Lab Hours.
Software and processes for computation design in architecture; image editing and creation, vector drawing, 3D modeling, parametric modeling, rendering techniques and simulation.

ARCH 246 Foundations of Historic Preservation
Credits 3. 3 Lecture Hours.
Exploration and evaluation of the cross-disciplinary work of historic preservation; emphasis on the significance of historic places to societal well-being and conservation alternatives for historic and cultural environments; review of preservation projects and treatments; guest presentations and case studies from practicing professionals and researchers in a variety of fields.

ARCH 249 Survey of World Architecture History I
Credits 3. 3 Lecture Hours.

ARCH 250 Survey of World Architecture History II
Credits 3. 3 Lecture Hours.
(ARCH 1302) Survey of World Architecture History II. A survey of world architecture and the human-designed and built environment from the 13th to the 19th century.

ARCH 260 Comparative Theory in the Built and Virtual Environments
Credits 3. 3 Lecture Hours.
Introduction of cultural theory and the environment, theories, special concepts and ideas relevant to the built and virtual environments with primary focus on the last fifty years; theory, theory building, and application to buildings and urban design; formation of ideas and critical ways of assessing the environment.

ARCH 281 Seminar in Contemporary Architecture
Credit 1. 1 Lecture Hour.
Presentations by and discussions with professionals representing specialty areas related to environmental design through the Department of Architecture Lecture Series. May be taken four times for credit. Must be taken on a satisfactory/unsatisfactory basis.

ARCH 291 Research in Architecture Innovation
Credits 1 to 4. 1 to 4 Other Hours.
Research conducted under the direction of faculty member in the College of Architecture. May be repeated 2 times for credit.
Prerequisite: Approval of instructor and department head.

ARCH 305 Architectural Design III
Credits 5. 2 Lecture Hours. 9 Lab Hours.
Integration of architectural theories and philosophy with environmental design systems; study of theoretical approaches to graphic and analytical thinking, problem identification and design dissemination through various media, case studies and problem resolution; conditions and forces associated with a variety of building types and the generation design solutions.
Prerequisites: Admission to upper level in environmental design; ARCH 249 and ARCH 250.

ARCH 317 Digital Fabrication for Architecture
Credits 3. 1 Lecture Hour. 4 Lab Hours.
Digital fabrication for architecture including software, numerically controlled tools, translation applications and management strategies for digital fabrication workflows; production of building components from three dimensional datasets of virtual architecture proposals.
Prerequisites: Junior or senior classification or approval of instructor; ARCH 216 or approval of instructor.

ARCH 327 Conceptual Structural Analysis
Credits 3. 1 Lecture Hour. 4 Lab Hours.
A non-mathematical investigation of structural systems and components with respect to behavior; selection of the most appropriate structural system for various building typologies.
Prerequisite: Junior or senior classification or approval of instructor.

ARCH 328 Architectural Envelopes
Credits 3. 3 Lecture Hours.
Study of roof, wall, glazing and screen systems of significant works in contemporary architecture and the strategies behind their making; focus on innovative materials, surface effects, and performance aspects.
Prerequisite: Junior or senior classification in environmental design.
ARCH 330 The Making of Architecture
Credits 3. 3 Lecture Hours.
Study of significant works of contemporary architecture and materials and strategies used in their making; focus on innovative materials, systems, and partnerships necessary to realize the design.
Prerequisites: Junior or senior classification in environmental design or approval of instructor or ARCH classification.

ARCH 331 Architectural Structures
Credits 3. 2 Lecture Hours. 2 Lab Hours.
Physical principles that govern statics and strength of materials through the design of architectural structures from a holistic view, in the context of architectural ideas and examples; introduction to construction, behavior of materials, and design considerations for simple and complex structural assemblies; computer applications.
Prerequisites: Junior or senior classification in environmental design; MATH 142 or equivalent; PHYS 201.

ARCH 335 Architectural Systems
Credits 3. 3 Lecture Hours.
Theory and applications of building energy use, envelope design, shading analysis, heating and cooling systems, lighting design; building water supply, plumbing and drainage systems; electrical, acoustical, fire and lightning protection; life safety; transportation systems and construction materials; calculations, equipment selection, and component sizing as they relate to building design.
Prerequisites: Junior or senior classification in environmental design; PHYS 201.

ARCH 345 History of Building Technology
Credits 3. 3 Lecture Hours.
Chronological development of civilization and building technology from prehistoric cultures to present; classic and modern materials, structural devices past and present, machine-produced products, prefabrication, construction methodology and servicing.

ARCH 346 Architecture, Heritage and Culture
Credits 3. 3 Lecture Hours.
Global exploration of how architecture and the built environment express culture and identity; theoretical and practical approaches to cultural heritage and conservation.
Prerequisite: Junior or senior classification.

ARCH 347 Recording Historic Buildings
Credits 3. 1 Lecture Hour. 4 Lab Hours.
Techniques for recording historic buildings; measuring and drawing to Historic American Building Survey Standards; field experience in photography, laser scanning, photogrammetry, hand measuring, field notes and record drawing preparation. May be repeated for credit.
Prerequisites: Junior or senior classification or approval of instructor.

ARCH 350 History and Theory of Modern and Contemporary Architecture
Credits 3. 3 Lecture Hours.
Development of modern and contemporary architecture in the 20th and 21st centuries; materials, structure, social and economic changes as well as architectural theory.
Prerequisites: Junior or senior classification.

ARCH 353 History of Product Design
Credits 3. 3 Lecture Hours.
History of product design in Europe and America including the relationship between designer and object, the relationship of design, industry and media over time and design criticism; focus on material/technical and typological approaches, comparative method and content analysis in context of original environment and social history.
Prerequisite: Junior or senior classification or approval of instructor.

ARCH 360 Topics in Design Build Community Service
Credits 3. 1 Lecture Hour. 4 Lab Hours.
Contemporary topics in architectural design-build practices including high impact interdisciplinary learning experiences developed through a project-based learning model with a focus on the planning, design, pre-construction, construction and project delivery; team-based approach with those outside of the architecture discipline to design, plan and complete project documents, estimates and undertake the construction activities necessary to make a fully functioning community service project.
Prerequisites: Junior or senior classification or approval of instructor.

ARCH 381 Design Seminar
Credit 1. 1 Lecture Hour.
Presentations by and discussions with professionals representing specialty areas related to architectural fabrication and product design. May be taken three times for credit.
Prerequisite: Junior or senior classification or approval of instructor.

ARCH 405 Architectural Design IV
Credits 5. 2 Lecture Hours. 9 Lab Hours.
A comprehensive design studio focused on the integration of design theory with functionally sustainable environmental and structural systems; consideration of a project from site analysis and programming through design detailing.
Prerequisites: Admission to upper level in environmental design; ARCH 305, ARCH 331, ARCH 335; CARC 301 or ARCH 494; concurrent enrollment in ARCH 431 and ARCH 435.

ARCH 406 Architecture Design V
Credits 5. 2 Lecture Hours. 9 Lab Hours.
Topical approaches to design, emphasizing theory and practice of architecture or related disciplines, such as urban design, interior design, health care design, etc.
Prerequisites: Junior or senior classification; admission to upper level in environmental design; ARCH 305, ARCH 331 and ARCH 335; CARC 301 or ARCH 494; students may with approval of the department enroll in the course during the summer term prior to taking ARCH 405, ARCH 431 and ARCH 435 if they are within 20 credit hours of graduation prior to the beginning of the following fall semester.

ARCH 421 Energy and Sustainable Architecture
Credits 3. 3 Lecture Hours.
Understanding the various design decisions impacting sustainability and energy efficiency; includes participation in an "academic" LEED-NC rating project; interdisciplinary team approach with a design studio architect to perform the LEED-NC rating on the architect's building; application of reference material, standards, and USGBC material.
Prerequisite: Junior or senior classification or approval of instructor.

ARCH 430 History of Ancient Architecture
Credits 3. 3 Lecture Hours.
Architecture of antiquity, examining stylistic, structural and theoretical advancements in building, beginning with Mesopotamian and continuing with Egyptian, Greek and Roman civilizations.
Prerequisite: ARCH 249 or ARTS 149; junior or senior classification or approval of degree coordinator or instructor.
ARCH 431 Integrated Structures  
Credits 2. 1 Lecture Hour. 2 Lab Hours.  
Selection and economics of structural systems in the context of integrating structural systems into a building through good design; analysis and design of wood, steel, concrete, and composite systems and members in relation to building design.  
Prerequisites: Admission to upper level in environmental design; ARCH 305, ARCH 331, ARCH 335; concurrent enrollment in ARCH 405 and ARCH 435.

ARCH 433 Architectural Lighting  
Credits 3. 3 Lecture Hours.  
Theory and practice of lighting design as an art and science; aperture design for sunlight control; selecting and locating luminaries to enhance interior and exterior surfaces and spaces.  
Prerequisite: ARCH 335 or junior or senior classification in EDAS.

ARCH 434 The Role of Sculpture and Painting in Ancient Architecture  
Credits 3. 3 Lecture Hours.  
Interrelationships of architecture, painting and sculpture in the ancient world including Egypt, Mesopotamia, Crete, Greece and Rome.  
Prerequisite: ARCH 249 or ARTS 149; junior or senior classification or approval of degree coordinator or instructor.

ARCH 435 Integrated Systems  
Credits 2. 1 Lecture Hour. 2 Lab Hours.  
Understanding how to integrate sustainable environmental systems into a building through good design; lectures support studio; systems faculty participate in studio critiques throughout the project.  
Prerequisites: Admission to upper level in environmental design; ARCH 305, ARCH 331, ARCH 335; concurrent enrollment in ARCH 405 and ARCH 431.

ARCH 437 Great Medieval Cathedrals  
Credits 3. 3 Lecture Hours.  
Interrelationships of architecture, sculpture and stained glass, technology and construction, function and form, society and patronage in the great period of medieval building.  
Prerequisite: ARCH 250 or ARTS 150; junior or senior classification or approval of degree coordinator or instructor.

ARCH 438 History and Design of Sacred Architecture  
Credits 3. 3 Lecture Hours.  
Exploration of history and design of sacred architecture; review of historic and contemporary houses of worship; global historic trends in sacred architecture in light of the current development in liturgy and design; significance of sacred places to society and culture.  
Prerequisite: Junior or senior classification or approval of instructor.

ARCH 439 Architectural History of Mexico  
Credits 3. 3 Lecture Hours.  
History of architecture and urban design of Mexico and the southwestern United States from pre-Hispanic to contemporary eras.  
Prerequisites: ARCH 249 or ARCH 250; junior or senior classification or approval of degree coordinator or instructor.

ARCH 441 Baroque and Rococo Architecture  
Credits 3. 3 Lecture Hours.  
The investigation of the history of architecture, the arts and society, and major creative individuals from the late sixteenth to the early eighteenth centuries.  
Prerequisite: ARCH 250 or ARTS 150; junior or senior classification or approval of degree coordinator or instructor.

ARCH 443 Aegean Art and Architecture  
Credits 3. 3 Lecture Hours.  
Art and architecture of the prehistoric Aegean, ca. 6000-1100-B.C.E.; focus on the built environment, material culture and visual arts of early civilization in the Aegean basin; evidence for regional and vernacular architectural traditions; expressions of power, ideology and social identity through monumental architectural and elite arts of Minoan Crete and Mycenaean Greece.  
Prerequisites: Junior or senior classification; approval of instructor or degree coordinator.

ARCH 451 Strategies in Architectural Management  
Credits 3. 3 Lecture Hours.  
Emerging strategies in the architecture and construction industry, with an emphasis on understanding the changing structure of the industry and the management of both firms and projects.  
Prerequisite: Senior classification or approval of degree coordinator.

ARCH 452 Careers in Architecture  
Credits 3. 3 Lecture Hours.  
Career opportunities in the profession of architecture; investigations into the composition of architectural practice today and the wide range of specialties represented in architectural firms; interviews with select representative individuals.  
Prerequisite: Admission to upper level in environmental design, construction science or landscape architecture.

ARCH 457 Ethics and Professional Practice  
Credits 3. 3 Lecture Hours.  
Issues and relationships within the business, legal and political environment; introduction to the concepts of architectural specifications and the AIA standard conditions of the construction contract; forms of construction, bidding and contract documents. For undergraduate students pursuing a professional degree and a career in architecture.  
Prerequisite: Senior classification in environmental design.

ARCH 458 Cultural and Ethical Considerations for Global Practice  
Credits 3. 3 Lecture Hours.  
Issues and relationships within the cultural, business, legal and political environments of global practice; differences in the construction contract, bidding and various forms of construction.  
Prerequisite: Junior or senior classification.

ARCH 461 Strategies in Architectural Management  
Credits 3. 3 Lecture Hours.  
Analysis and design of architectural interiors; historical and professional perspectives incorporating programming, space planning and organization; specification and selection of furnishings and materials to satisfy user needs in residential, commercial and institutional settings.  
Prerequisites: Admission to upper level in environmental design; concurrent enrollment in ARCH 405, ARCH 431 and ARCH 435 not allowed.

ARCH 481 Seminar  
Credit 1. 1 Lecture Hour.  
Presentations by and discussions with professionals representing specialty areas related to environmental design; career and academic objectives. May be repeated for up to 4 credit hours. Must be taken on a satisfactory/unsatisfactory basis.  
Prerequisite: Junior or senior classification or approval of instructor.
ARCH 484 Summer Internship
Credits 6. 12 Other Hours.
Practical experience in an office of design allied professionals; 10-week internship with a minimum of 400 hours continuous employment; departmental pre-approval through the departmental internship coordinator required; post evaluation conducted following the internship. May not be repeated for credit.
Prerequisites: Junior or senior classification or approval of instructor; approval of the environmental design internship coordinator.

ARCH 485 Directed Studies
Credits 1 to 5. 1 to 5 Other Hours.
Special projects in architecture. May be repeated for credit.
Prerequisites: Admission to upper level in environmental design; approval of instructor and degree coordinator.

ARCH 489 Special Topics in...
Credits 1 to 4. 1 to 4 Lecture Hours. 0 to 4 Lab Hours.
Special topics in an identified area of architecture. May be repeated for credit.
Prerequisite: Junior or senior classification; approval of instructor and degree coordinator.

ARCH 491 Advanced Architecture Innovation Research
Credits 1 to 6. 1 to 6 Other Hours.
Research conducted under the direction of faculty member in the College of Architecture. May be repeated 2 times for credit.
Prerequisite: Admission to upper level in environmental design; approval of instructor and department head.

ARCH 494 Internship
Credits 9. 18 Other Hours.
Practical experience in an office of design allied professionals; fifteen week internship with a minimum of 600 hours of continuous employment; departmental pre-approval through the departmental internship coordinator required; post evaluation conducted following the internship. To be taken only as a requirement for the study away semester. May not be repeated for credit.
Prerequisites: Junior or senior classification; admission to upper level in environmental design; CARC 481; approval of the environmental design internship coordinator.