DEPARTMENT OF ARCHITECTURE

The undergraduate curriculum in Environmental Design Architectural Studies at Texas A&M University is offered through the Department of Architecture. The four-year Bachelor of Environmental Design (BED) degree prepares students for challenging careers in industries supporting the built environments. The program produces graduates who are prepared to influence society with informed and visionary designs—designs that ensure sustainability by responding to cultural, social, economic, and ecological factors.

Students interested in professional registration as an architect must complete a National Architectural Accreditation Board (NAAB) accredited Master of Architecture program in addition to the four-year undergraduate Bachelor of Environmental Design degree.

Enrollment in Environmental Design Architectural Studies Upper Level Program

1. Students must have satisfactorily completed at least 54 hours of coursework with a minimum GPR of 2.5 for those courses completed at Texas A&M University.
2. Students must satisfactorily complete the following courses as part of the 54 hours of coursework with a minimum of a 2.5 GPR to apply for upper level.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Semester Credit Hours</th>
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<tbody>
<tr>
<td>ARCH 205</td>
<td>Architecture Design I</td>
<td>4</td>
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<tr>
<td>ARCH 206</td>
<td>Architecture Design II</td>
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<tr>
<td>or ARCH 212</td>
<td>or Architecture Design II</td>
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<tr>
<td>ARCH 249</td>
<td>Survey of World Architecture History I</td>
<td>3</td>
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<tr>
<td>ARCH 250</td>
<td>Survey of World Architecture History II</td>
<td>3</td>
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<tr>
<td>ARCH 281</td>
<td>Seminar in Contemporary Architecture</td>
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<td>CARC 481</td>
<td>Seminar</td>
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<tr>
<td>ENDS 105</td>
<td>Design Foundations I</td>
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<tr>
<td>ENDS 108</td>
<td>Design and Visual Communication Foundations II</td>
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<tr>
<td>ENDS 115</td>
<td>Design Communication Foundations</td>
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<td>ENGL 104</td>
<td>Composition and Rhetoric</td>
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<td>Select one of the following:</td>
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<td>MATH 141</td>
<td>Finite Mathematics</td>
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<td>&amp; MATH 142</td>
<td>and Business Calculus</td>
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<tr>
<td>MATH 151</td>
<td>Engineering Mathematics I</td>
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<td>&amp; MATH 152</td>
<td>and Engineering Mathematics II</td>
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<td>PHYS 201</td>
<td>College Physics</td>
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<tr>
<td>Total Semester Credit Hours</td>
<td>45</td>
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</tbody>
</table>

3. Students must apply to the upper level through the department. The application is to be submitted by the following date.
   · March 1 for Summer and Fall admission
4. Students applying for upper level must submit a portfolio that provides documentation of the applicant’s design representation and creative problem-solving ability. Portfolios will be reviewed as evidence supporting design ability. Guidelines are outlined on the application form and in the Student Services office. Students will be admitted according to available space.

Preparation for Professional Studies in Architecture

Although the four-year BED degree at Texas A&M University is a pre-professional degree and is not accredited by the National Architectural Accrediting Board (NAAB), those who have completed this pre-professional degree can apply to an accredited Master of Architecture program, which is offered at Texas A&M University.

In the United States, most state architectural registration boards require, as the prerequisites for licensure, a degree from a National Architectural Accrediting Board (NAAB) accredited professional degree program, the fulfillment of the National Council of Architectural Registration Board’s (NCARB) Internship Development Program (IDP), and the successful completion of NCARB’s Architectural Licensing Examination (ARE). The NAAB, which is the sole agency authorized to accredit U.S. professional degree programs in architecture, recognizes three types of degrees: the Bachelor of Architecture (BArch), the Master of Architecture (MArch), and the Doctor of Architecture (DArch). Students should consult the Texas A&M Master of Architecture, NAAB and NCARB websites for additional information.

Transfer and Change of Major Students

Transfer and change of major students (students currently enrolled in another major at Texas A&M University) who are admitted to the Department of Architecture are classified as lower level (EDAL). Transfer students who meet all the criteria for admittance to upper-level studies may immediately apply for admittance to upper level.

Transfer students who have completed at least 24 graded transferable hours, and change of major students who have completed at least 12 graded transferable hours are encouraged to participate in a 10-week summer module offered by the Department of Architecture. The summer module is designed to provide an intensive first-year design studio sequence along with support coursework that will enable change of major and transfer students to qualify for sophomore design studios the following semester. This summer module can enable Transfer and Change of Major students to complete the four-year degree in a more efficient and timely manner.

Transfer students accepted into the Bachelor of Environmental Design degree program must submit a portfolio to the Department of Architecture to receive credit for drawing and design studio classes taken at another university or college, unless the course is listed as an equivalent under the Texas common course numbering system. The review of the portfolio will ensure appropriate studio placement. Additional information may be found on the Department of Architecture website.
Faculty

Abbott, Elton D, Associate Professor of the Practice
Architecture
PHD, Texas A&M University, 1983

Aitani, Koichiro, Associate Professor
Architecture
MARC, Virginia Polytechnic Institute and State University, 1997

Ali, Ahmed K, Associate Professor
Architecture
PHD, Virginia Polytechnic Institute and State University, 2012

Babe, John C, Associate Professor of the Practice
Architecture
BAR, University of Toronto, 1989

Baltazar, Juan Carlos, Associate Professor
Architecture
PHD, Texas A&M University, 2006

Beltran, Liliana O, Associate Professor
Architecture
PHD, University of California, Berkeley, 1997

Billingsley, Andrew J, Assistant Lecturer
Architecture
BS, California State University, Chico, 2011

Borges Gonzalez, Alejandro, Associate Professor of the Practice
Architecture
MARC, Cornell University, 1994

Borhani Haghighi, Alireza, Lecturer
Architecture
MARC, Virginia Polytechnic Institute and State University, 2012

Caffey, Stephen M, Instructional Assistant Professor
Architecture
PHD, The University of Texas at Austin, 2008

Campagnol Abuabara, Gabriela, Lecturer
Architecture
PHD, University of Sao Paulo - USP, 2008

Clayton, Mark J, Professor
Architecture
PHD, Stanford University, 1998

Culp, Charles H, Professor
Architecture
PHD, Iowa State University, 1976

Deyong, Sarah J, Associate Professor
Architecture
PHD, Princeton University, 2008

Erminy Castillo, Marcel, Associate Professor of the Practice
Architecture
PHD, Central University of Venezuela, 1987

Esquivel, Jose G, Associate Professor
Architecture
MA, The Ohio State University, 1998

Geva, Anat M, Professor
Architecture
PHD, Texas A&M University, 1995

Gibbs, Brian C, Visiting Lecturer
Architecture
MARC, Texas A&M University, 2006

Glowacki, Kevin T, Associate Professor
Architecture
PHD, Bryn Mawr College, 1991

Haberk, Jeff, Professor
Architecture
PHD, University of Colorado, 1986

Hamilton, Daniel K, Professor
Architecture
MS, Pepperdine University, 2003

He, Weiling, Associate Professor
Architecture
PHD, Georgia Institute of Technology, 2005

Hill, Rodney C, Professor
Architecture
MA, University of California, Berkeley, 1969

Holliday, Ray W, Assistant Professor of the Practice
Architecture
MLA, Texas A&M University, 2000
MARC, Texas A&M University, 1992

Holliday, Shelley D, Associate Professor of the Practice
Architecture
MEN, Texas A&M University, 2001

Hunter, Christopher S, Assistant Lecturer
Architecture
MS, Texas A&M University, 2015

Jain, Priya, Assistant Professor
Architecture
MARC, University of Arizona, 2007

Kalantar Mehrjardi, Negar, Assistant Professor
Architecture
PHD, Virginia Polytechnic Institute and State University, 2016

Kim, Jong Bum, Assistant Lecturer
Architecture
PHD, Texas A&M University, 2014

Klein, Nancy L, Associate Professor
Architecture
PHD, Bryn Mawr College, 1991

Lu, Zhipeng, Senior Lecturer
Architecture
PHD, Texas A&M University, 2009
Maffei, Gerald L, Visiting Professor
Architecture
MARC, University of California, Berkeley, 1969

Mann, George J, Professor
Architecture
MS, Columbia University, 1962

Miranda, Valerian, Associate Professor
Architecture
PHD, Texas A&M University, 1988

Nichols, Anne B, Associate Professor of the Practice
Architecture
PHD, University of Illinois at Urbana-Champaign, 2000

Obrien, Michael J, Professor
Architecture
MARC, Virginia Polytechnic Institute and State University, 1982

Pentecost, Aubrey R, Professor of the Practice
Architecture
DPH, The University of Texas School of Public Health, 1982

Rodiek, Susan D, Associate Professor
Architecture
PHD, Cardiff University, 2004

Rogers, Julia S, Senior Lecturer
Architecture
PHD, Texas A&M University, 1996

Tabb, Phillip J, Professor
Architecture
PHD, Architectural Association Graduate School of Architecture, 1990

Vanegas, Jorge A, Professor
Architecture
PHD, Stanford University, 1988

Warden, Robert R, Professor
Architecture
MA, University of New Mexico, 1994
MARC, Texas A&M University, 1986

Wells, Ward V, Professor
Architecture
PHD, University of Oklahoma, 1976

Yan, Wei, Professor
Architecture
MA, University of California, Berkeley, 2004

Zhu, Xuemei, Associate Professor
Architecture
PHD, Texas A&M University, 2008

Minors

• Architectural Fabrication and Product Design Minor (http://catalog.tamu.edu/undergraduate/architecture/architecture/architectural-fabrication-product-design-minor)

• Architectural Heritage Conservation Minor (http://catalog.tamu.edu/undergraduate/architecture/architecture/architectural-heritage-conservation-minor)

• Art and Architectural History Minor (http://catalog.tamu.edu/undergraduate/architecture/architecture/art-architecture-history-minor)

• Global Art, Design and Construction Minor (http://catalog.tamu.edu/undergraduate/architecture/architecture/global-art-design-construction-minor)

• Sustainable Architecture and Planning Minor (http://catalog.tamu.edu/undergraduate/architecture/architecture/sustainable-architecture-planning-minor)

Courses

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 106, 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; ENDS 105, ENDS 108, ENDS 115.

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-behavioral 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 foot prints; global applications of sustainable approaches.

Majors

• Bachelor of Environmental Design in Environmental Design Architectural Studies (http://catalog.tamu.edu/undergraduate/architecture/architecture/environmental-design-architectural-studies-bed)
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.
Prerequisites: 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 and 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 463 Elements of Interior Architecture
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.

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.
CARC 181 First Year Seminar
Credit 1. 1 Lecture Hour.
Seminar on various contemporary topics; introduction to high quality college instruction and research; focus on writing, speaking, exploration, discussion and research. May be taken two times for credit.  
**Prerequisite:** First time in college and College of Architecture undergraduate studies.

CARC 291 Research
Credits 1 to 4. 1 to 4 Other Hours.
Research conducted under the direction of a faculty member. May be repeated 2 times for credit.  
**Prerequisites:** Freshman or sophomore classification and approval of instructor.

CARC 300 College of Architecture Study Abroad
Credits 1 to 18. 1 to 18 Other Hours.
For students in approved study abroad programs participating in reciprocal educational exchange programs. May be repeated for credit.  
**Prerequisite:** Junior or senior classification; approval of assistant dean for international programs and initiatives.

CARC 301 Field Studies in Design Innovation
Credits 1 to 18. 1 to 18 Other Hours.
Design innovation in international and domestic environments away from the Texas A&M University campus; emphasis on the cultural, social, economic, geographical, climatic and technological factors influencing design solutions for human needs. May be taken up to two times in the same semester.  
**Prerequisite:** Junior or senior classification; approval of assistant dean for international programs and initiatives.

CARC 311 Field Studies in Design Communication
Credits 3. 2 Lecture Hours. 4 Lab Hours.
Design communication in international and domestic environments away from the Texas A&M University campus; emphasis on the tools, methods and techniques for design communication. May be taken up to two times in the same semester.  
**Prerequisite:** Junior or senior classification; approval of assistant dean for international programs and initiatives.

CARC 321 Field Studies in Design Technology
Credits 3. 3 Other Hours.
Design technology in international and domestic environments away from the Texas A&M University campus; emphasis on structural, material and environmental systems and methods of construction utilized to realize design solutions. May be taken up to two times in the same semester.  
**Prerequisite:** Junior or senior classification; approval of assistant dean for international programs and initiatives.

CARC 331 Field Studies in Design Philosophy
Credits 3. 3 Other Hours.
Design philosophy in international and domestic environments away from the Texas A&M University campus; emphasis on the historical, philosophical, cultural, social and economic factors that influence design solutions. May be taken up to two times in the same semester.  
**Prerequisites:** Junior or senior classification; approval of assistant dean for international programs and initiatives.

CARC 481 Seminar
Credit 1. 1 Lecture Hour.
Preparatory seminar for select College of Architecture study away and internships; topics include introduction to the language, culture and history of study abroad location. Must be taken the spring semester before the student’s study away semester. Must be taken on a satisfactory/unsatisfactory basis.  
**Prerequisites:** Junior or senior classification; approval of assistant dean for international programs and initiatives.

CARC 485 Directed Studies
Credits 1 to 6. 1 to 6 Other Hours.
Individual research in architecture, construction science or landscape architecture in an international or domestic environment away from the Texas A&M University campus. May be taken up to two times in the same semester.  
**Prerequisite:** Junior or senior classification; approval of assistant dean for international programs and initiatives.

CARC 489 Special Topics in...
Credits 1 to 4. 1 to 4 Lecture Hours. 0 to 4 Lab Hours.
Selected topics in an identified area of architecture. May be repeated for credit.  
**Prerequisites:** Junior or senior classification; approval of assistant dean for international programs and initiatives.

ENDS 101 Design Process
Credits 3. 3 Lecture Hours.  
(ARCH 1311) Design Process. Fundamental design processes, issues and theories relevant to design resolution and the creation of new ideas; creative thought processes from the formation of ideas through incubation to final product and future impact on the physical environment and society.

ENDS 105 Design Foundations I
Credits 4. 1 Lecture Hour. 8 Lab Hours.  
Visual and functional design principles; development of skills in perception, thought and craft as they apply to the formation of two- and three-dimensional relationships; design attitudes and environmental awareness.  
**Prerequisite:** Major in environmental design.

ENDS 106 Design Foundations II
Credits 4. 1 Lecture Hour. 6 Lab Hours.  
Approaches to problem identification and problem solving emphasizing an awareness of human, physical and cultural factors influencing design; reinforcement of visual and verbal communication as applied to the design process.  
**Prerequisite:** ENDS 105.

ENDS 108 Design and Visual Communication Foundations II
Credits 5. 1 Lecture Hour. 12 Lab Hours.  
Approaches to problem identification and problem solving emphasizing human, physical and cultural factors influencing architectural design; understanding of space, materiality and tectonics in a human body scale; development of drawing methods with emphasis on analytical drawing; reinforcement of visual and verbal communication as applied to design processes.  
**Prerequisite:** ENDS 105 and ENDS 115.
ENDS 114 Introduction to Design Communication  
Credits 3. 1 Lecture Hour. 4 Lab Hours.  
Introduction to drawing methods for non-majors; free hand drawing as a creative and communicative tool to express design thinking, architectural form and space.

ENDS 115 Design Communication Foundations  
Credits 3. 1 Lecture Hour. 4 Lab Hours.  
(Arch 1307) Design Communication Foundations. Introduction to and practice of tools, methods, techniques available for graphic communication; graphic communication and the design process; observation and other forms of free-hand drawing and drawing systems that develop representational and descriptive capabilities.  
Prerequisite: Major in environmental design.

ENDS 116 Design Communication Foundations II  
Credits 3. 1 Lecture Hour. 4 Lab Hours.  
(Arch 1308) Design Communication Foundations II. Introduction to design drawing using a wide variety of tools ranging from conventional drafting and drawing equipment to the latest digital graphic applications; a focused investigation of analytical drawing as it contributes to the design process; experience of a wide variety of drawing conventions intended to equip students to navigate a design process.  
Prerequisites: ENDS 115 and concurrent enrollment in ENDS 106.

ENDS 485 Directed Studies  
Credits 1 to 6. 1 to 6 Other Hours.  
Special problems in environmental design. May be repeated for up to 12 credit hours.  
Prerequisite: Approval of instructor and degree coordinator.

ENDS 489 Special Topics in...  
Credits 1 to 4. 1 to 4 Lecture Hours.  
Selected topics in an identified field of environmental design. May be repeated for up to 9 credit hours.  
Prerequisite: Approval of instructor or department head.

ENDS 491 Research  
Credits 1 to 4. 1 to 4 Other Hours.  
Research conducted under the direction of faculty member in environmental design. May be repeated 2 times for credit.  
Prerequisites: Admission to upper level in environmental design; approval of instructor and department head.