

Architecture

ARCHITECTURE – ARCHI

ish Young, Dean
Physical Sciences and Engineering Division
Physical Sciences Building, Room 263

Possible career opportunities

Students are provided with a strong background in spatial composition, design theory, and production methods that prepare them for employment as an architectural technician. Many general courses in the architecture program offer education in areas that are also applicable to an entry-level internship position performing manual or computer-aided drafting, furniture or cabinet design, or architectural rendering and illustration.

Program-level student learning outcomes

Program learning outcomes are subject to change. The most current list of program learning outcomes for each program is published on the DVC website at www.dvc.edu/slo.

**Associate in science degree
Architecture design**

Students completing the program will be able to...

- A. communicate architectural concepts using graphic conventions and representational methods.
- B. demonstrate an understanding of drawing methods and graphic compositional techniques.
- C. construct physical models of architectural elements and spaces.
- D. demonstrate an understanding of building components, structures and systems in relation to design.
- E. identify notable architects, design concepts, canonical buildings and precedents in architecture.
- F. identify the historical and contemporary role of architects in the profession and related design fields.
- G. describe the role of environmental design, energy use and sustainable design practices in the profession and in buildings.
- H. utilize digital means of production, representation and/or digital fabrication methods for the creation and manipulation of architectural images and forms.

Students in the architectural design program will develop the necessary skills to analyze, modify or create architectural space and the abilities to present their ideas in graphic form using a variety of media. The program emphasizes spatial and architectural theories relating to design, architectural history, and methods of graphic composition and presentation.

The DVC architecture design major is intended for transfer. Students who intend to transfer must consult with a program advisor or counselor to ensure that the requirements for transfer to four-year institutions of their choice are met. Students who intend to transfer are advised to select General Education Option 2 (IGETC) or Option 3 (CSU GE). Option 1 (DVC General Education) is not generally advised.

To earn an associate in science degree with a major in architecture design, students must complete each course used to meet a major requirement with a "C" grade or higher, maintain an overall GPA of 2.5 or higher and complete all general education requirements as listed in the catalog. Many upper level architecture degree programs require specific physics, math and general education preparation. Please consult the transfer institution for required courses. Certain courses may satisfy both major and general education requirements; however, the units are only counted once.

<i>major requirements:</i>	<i>units</i>
ARCHI-120 Introduction to Architecture and Environmental Design	3
ARCHI-121 Architectural Design I.....	4
ARCHI-130 Architectural Graphics I	3
ARCHI-131 Architectural Graphics II	3
ARCHI-135 Digital Tools for Design	3
ARCHI-220 Architectural Design II.....	4
ARCHI-221 Architectural Design III.....	4
ARCHI-244 Architectural Practice and Working Drawings I.....	3
CONST-144 Materials of Construction.....	3

plus at least 3 units from:

ARCHI-110 Design-Build Workshop	1
ARCHI-136 Digital Tools for Architecture	3
ARCHI-156 History of World Architecture: Early Civilizations to Middle Ages.....	3
ARCHI-157 History of World Architecture: Middle Ages to 18th Century.....	3
ARCHI-158 History of World Architecture: 18th Century to Present	3
ARCHI-160 History of American Architecture	3
ARCHI-207 Environmental Control Systems	3
ARCHI-211 Architectural Structures	3
ARCHI-215 Architectural Portfolio Workshop	1.5
total minimum required units	33

**Associate in science degree
Architecture technology**

Students completing the program will be able to...

- A. communicate architectural concepts using graphic conventions and representational methods.
- B. demonstrate an understanding of drawing methods and graphic compositional techniques.
- C. construct physical models of architectural elements and spaces.
- D. demonstrate an understanding of building components, structures and systems in relation to design.
- E. identify notable architects, design concepts, canonical buildings and precedents in architecture.

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- F. identify the historical and contemporary role of architects in the profession and related design fields.
- G. describe the role of environmental design, energy use and sustainable design practices in the profession and in buildings.
- H. utilize digital means of production, representation and/or digital fabrication methods for the creation and manipulation of architectural images and forms.

The DVC architecture technology degree program offers students the opportunity to earn an associate in science degree in architecture technology, which prepares students for a career as an architectural intern, draftsman or designer. As an architecture technology student, students gain an in-depth understanding of the requirements and skills necessary for employment in an architect’s office.

Architectural interns, draftsmen or designers prepare technical and presentation drawings, draft copies of specifications and cost estimates, revise plans, trace details from various sources, operate printing machines, and assemble prints and other documents for projects. Graduates with these skills are also employed by landscape architects, industrial designers, interior designers, and engineers.

To earn an associate in science with a major in architecture technology, students must complete each course used to meet a major requirement with a “C” grade or higher and maintain an overall GPA of 2.5 or higher in the coursework required for the major. Certain courses may satisfy both major and general education requirements; however, the units are only counted once.

<i>major requirements:</i>	<i>units</i>
ARCHI-120 Introduction to Architecture and Environmental Design	3
ARCHI-126 Computer Aided Design and Drafting - AutoCAD	3
ARCHI-130 Architectural Graphics I	3
ARCHI-244 Architectural Practice and Working Drawings I.....	3
CONST-124 Construction Details and Specifications	3
CONST-135 Construction Processes: Residential	4
CONST-144 Materials of Construction.....	3

plus at least 6 units from:

ARCHI-131 Architectural Graphics II	3
ARCHI-226 Computer Aided Drafting Design, Advanced Concepts - AutoCAD	3
ARCHI-296 Internship in Occupational Work Experience Education in ARCHI.....	2-3
CONST-116 Plane Surveying.....	4
CONST-181 Building Code Interpretation: Non-Structural.....	3
CONST-183 Title 24: Energy Conservation Codes	3
total minimum required units	28

**Certificate of achievement
Architecture technology**

Students completing the program will be able to...

- A. communicate architectural concepts using graphic conventions and representational methods.
- B. demonstrate an understanding of drawing methods and graphic compositional techniques.
- C. construct physical models of architectural elements and spaces.
- D. demonstrate an understanding of building components, structures and systems in relation to design.
- E. identify notable architects, design concepts, canonical buildings and precedents in architecture.
- F. identify the historical and contemporary role of architects in the profession and related design fields.

This program offers students the opportunity to earn a certificate of achievement in architecture technology, which prepares students for a career as an architectural intern, draftsman or designer. As an architecture technology student, students gain an in-depth understanding of the requirements and skills necessary for employment in an architect’s office.

Architectural interns, draftsmen or designers prepare technical and presentation drawings, draft copies of specifications and cost estimates, revise plans, trace details from various sources, operate printing machines, and assemble prints and other documents for projects. Graduates with these skills are also employed by landscape architects, industrial designers, and engineers.

To earn a certificate of achievement, students must complete each course used to meet a certificate requirement with a “C” grade or higher. Required courses are available in the day, and some are also offered in the evening.

<i>required courses:</i>	<i>units</i>
ARCHI-120 Introduction to Architecture and Environmental Design	3
ARCHI-126 Computer Aided Design and Drafting - AutoCAD	3
ARCHI-130 Architectural Graphics I	3
ARCHI-244 Architectural Practice and Working Drawings I.....	3
CONST-124 Construction Details and Specifications	3
CONST-135 Construction Processes: Residential	4
CONST-144 Materials of Construction.....	3

plus at least 6 units from:

ARCHI-131 Architectural Graphics II	3
ARCHI-226 Computer Aided Drafting Design, Advanced Concepts - AutoCAD	3
ARCHI-296 Internship in Occupational Work Experience Education in ARCHI.....	2-3
CONST-116 Plane Surveying.....	4
CONST-181 Building Code Interpretation: Non-Structural.....	3
CONST-183 Title 24: Energy Conservation Codes	3
total minimum required units	28

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ARCHI-110 Design-Build Workshop

1 unit SC

- May be repeated three times
- 72 hours laboratory per term
- Recommended: ARCHI-105 or equivalent
- Note: During spring term students will participate in the Cal Poly San Luis Obispo Design Village Competition. This allows each group of two-six students to design, build and live in their structure for three days in Poly Canyon. Multiple teams allowed, entry fees and material fees may apply.

This is a design-build course for full-scale projects in wood, metal, and other materials to be designed and constructed by students working in teams in consultation with faculty. The course explores drawing, modeling, fabrication and assembly of full-scale architectural projects utilizing manual and computer controlled tools. CSU

ARCHI-119 Introduction to Technical Drawing

3 units SC

- 36 hours lecture/72 hours laboratory per term
- Note: Same as ENGTC-119. For students with no previous drafting experience. Credit by examination option available.

This course is an introduction to the use of technical drawing tools, technical lettering and line work, geometric construction, sketching and shape description, orthographic projection, dimensioning, section views, auxiliary views and pictorials. Introduction to the use of computers to produce technical drawings. CSU

ARCHI-120 Introduction to Architecture and Environmental Design

3 units LR

- 36 hours lecture/72 hours laboratory per term

This course is an introduction to the professional field of architecture, environmental design, landscape design, and urban planning. An overview of the practice of environmental design with concepts in design methods and theory, analysis and problem solving, history of design, and the profession is presented. There is an emphasis on beginning design projects utilizing drawing, model making and computers. CSU, UC

ARCHI-121 Architectural Design I

4 units SC

- 36 hours lecture/108 hours laboratory per term
- Prerequisite: ARCHI-120 or equivalent and ARCHI-130 (may be taken concurrently) or equivalent
- Recommended: ARCHI-135 or equivalent

This first-level studio design course focuses on development of fundamental design skills and spatial theory. Topics include spatial qualities of architecture, composition and ordering systems, circulation and movement through space, daylighting, introductory structural systems, precedent studies and architectural theory. CSU, UC

ARCHI-126 Computer Aided Design and Drafting - AutoCAD

3 units SC

- 36 hours lecture/72 hours laboratory per term
- Recommended: ARCHI-119 or ENGTC-119 or equivalent
- Note: Same as ENGTC-126. Students may petition to repeat this course when software or hardware is changed. Only the first course completed will be applied toward a degree or certificate requirement. Units for both courses will apply towards the 60 units required for the degree. Credit by examination option available.

This introductory course covers the fundamentals of AutoCAD, a computer design drafting program, applied to the creation of technical drawings. Hands-on training utilizing a comprehensive overview of the software package and its applications to architectural drafting is stressed. CSU, UC (credit limits may apply to UC - see counselor)

ARCHI-127 Introduction to Revit

3 units SC

- 36 hours lecture/54 hours laboratory per term
- Note: Credit by examination option available.

This course is an introduction to Revit software and covers fundamentals of the Revit operating environment, file structure, organization and creation of three-dimensional and two-dimensional construction models and documents. CSU

ARCHI-130 Architectural Graphics I

3 units LR

- 36 hours lecture/72 hours laboratory per term
- Recommended: ARCHI-119 or ENGTC-119 or equivalent

This course is an introduction to architectural graphics related to projection systems, representation of architectural forms, rendering and shadow casting. An overview of history and methods of graphic representation used by architects and an application of drafting, drawing and rendering methods is presented. Problem-solving in orthographic and pictorial projection and drawing, architectural lettering, shades and shadows, and color rendering techniques are covered. There is an emphasis on mechanical drafting with pencil and beginning introduction to other art media. CSU, UC

ARCHI-131 Architectural Graphics II

3 units LR

- 36 hours lecture/72 hours laboratory per term
- Prerequisite: ARCHI-130 or equivalent

This course is an advanced exploration of drawing techniques utilizing freehand and mechanical drawing methods of representation. Emphasis is placed on perspective drawing, shade and tone, color theory and composition. A continuing exploration of media for architectural rendering and representation is included. CSU, UC

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ARCHI-135 Digital Tools for Design

3 units SC

- 36 hours lecture/72 hours laboratory per term
- Note: ARCHI-135 and ARCHI-136 may be taken in any order.

This course is an introduction to the use of computers in design communication and representation. Topics presented include two-dimensional and three dimensional graphics utilizing Adobe Illustrator, InDesign, Photoshop, AutoCAD, Sketchup and other related programs. Students will be introduced to additional concepts in processing digital images, digital photography, scanning and printing. CSU

ARCHI-136 Digital Tools for Architecture

3 units SC

- 36 hours lecture/72 hours laboratory per term
- Note: ARCHI-135 and ARCHI-136 may be taken in any order.

This course covers the use of computers in architectural design for advanced architectural graphics, three-dimensional (3-D) modeling, rendering and fabrication. Topics include Rhinoceros 3-D modeling software and V-Ray rendering software for architectural presentations, modeling of complex non-orthogonal geometries and architectural forms, fabrication utilizing the campus laser cutter and current computer graphics and architectural rendering standards. CSU

ARCHI-137 Digital Fabrication and Prototyping

3 units SC

- 36 hours lecture/72 hours laboratory per term

This is an introductory course in design prototyping and digital fabrication methods. Manual and digital modeling, with an exploration of computer numerical control (CNC) fabrication methods will be explored. Shaping and material removal using CNC fabrication tools for a variety of materials, including plastics, wood, metals and ceramics will be practiced in addition to three-dimensional printing methods. CSU

ARCHI-138 Introduction to Parametric Modeling with Grasshopper

2 units SC

- 24 hours lecture/36 hours laboratory per term
- Recommended: ARCHI-136 or equivalent

This course is an introduction to Grasshopper for the generation of complex three dimensional architectural forms in Rhinoceros 3D modeling software. The course covers basic scripting and management of data within the Grasshopper environment. The course will conclude with the construction of a physical model generated in Grasshopper to be fabricated using the campus laser cutter and assembled on campus. The finished model will be displayed on campus. CSU

ARCHI-150 Topics in Architecture

.3-4 units SC

- Variable hours

A supplemental course in architecture to provide a study of current concepts and problems in architecture. Specific topics to be announced in the schedule of classes. CSU

ARCHI-156 History of World Architecture: Early Civilizations to Middle Ages

3 units SC

- 54 hours lecture per term
- Recommended: Eligibility for ENGL-122 or equivalent
- Note: ARCHI-156, 157 and 158 may be taken in any order

Architecture and urbanism from prehistory to the Middle Ages. Social, cultural, and physical conditions that influenced the built environment in the Mediterranean region, Europe, Asia, Africa, and Pre-Columbian Americas. Topics include early megalithic tombs and structures, Native American dwellings, architecture of Egypt, Mesopotamia, Persia and the Middle East, early civilizations of the Aegean, temples and cities of Greece, architecture and engineering of Rome, and early medieval structures after the fall of Rome. CSU, UC

ARCHI-157 History of World Architecture: Middle Ages to 18th Century

3 units SC

- 54 hours lecture per term
- Recommended: Eligibility for ENGL-122 or equivalent
- Note: ARCHI-156, 157 and 158 may be taken in any order

This course covers world architecture and urbanism from the Middle Ages until the end of the 18th Century. Exploration of social, cultural, and physical conditions that influence the built environment of Europe, Asia and the Colonial Americas will be discussed. This course also covers the development of the Gothic cathedral, art and architecture of the Renaissance, Baroque design in Europe, architecture of Japan, China and India, historic buildings in Colonial America, and architectural developments in Europe during the 18th Century including Romanticism and later Greek and Gothic revival movements. CSU, UC

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ARCHI-158 History of World Architecture: 18th Century to Present

3 units SC

- 54 hours lecture per term
- Recommended: Eligibility for ENGL-122 or equivalent
- Note: ARCHI-156, 157 and 158 may be taken in any order

This course presents architecture and urbanism of the modern world, from the 18th century to the present. Exploration of social, cultural, and physical conditions influencing the built environment of Europe, Asia, and the Americas. Course covers American architectural contributions of Frank Lloyd Wright and the Chicago School of Architecture, Art Nouveau and the work of Gaudi with in-depth discussion of the influence of industrialization in architecture as well as topics in Russian Constructivism, 20th Century Modernism, Post-modernism and Deconstructivism. CSU, UC

ARCHI-160 History of American Architecture

3 units SC

- 54 hours lecture per term
- Recommended: Eligibility for ENGL-122 or equivalent

This course is a survey of American architectural history from Native American dwellings to the present. The architectural influence of immigrant groups is presented, as well as the influences of architectural design movements in the United States through the course of history. CSU, UC

ARCHI-165 Architecture and Urbanism of Paris and France

3 units SC

- 54 hours lecture per term
- Recommended: Eligibility for ENGL-122 or equivalent

This course will include the history of the urban development of Paris from early Roman settlements to the present. The cultural and architectural developments during major significant historical periods will be presented. Influence from social and political movements on growth, design, and construction of buildings and public urban spaces are discussed. This course also reviews the architectural history of Versailles, chateaux of the Loire Valley and neighboring Chartres Cathedral. CSU, UC

ARCHI-207 Environmental Control Systems

3 units SC

- 54 hours lecture per term
- Recommended: MATH-090 or equivalent

This course covers the theory and application of climate, energy use and comfort as determinants of architectural form in small-scale buildings. Methods of ventilating, cooling, heating, and lighting will be discussed. Topics include passive solar techniques, cross and stack ventilation, daylighting and an introduction to mechanical systems for environmental control in buildings. There will be an emphasis on green building technology and sustainable practices in design of environmental control systems. CSU

ARCHI-211 Architectural Structures

3 units LR

- 54 hours lecture per term
- Prerequisite: PHYS-120 (may be taken concurrently) or equivalent

This course is an introduction to the role of structures in the making of buildings, statics, and the creation of simple three-dimensional structures. The development of skills to analyze structures composed of axial force (truss) members will also be covered. CSU

ARCHI-215 Architectural Portfolio Workshop

1.5 units SC

- 18 hours lecture/36 hours laboratory per term
- Recommended: ARCHI-121 or equivalent
- Note: Students must have a body of work to document and publish in a portfolio

Students will develop digital and printed architectural design portfolios for transfer, job placement or professional purposes. Course covers printing, binding and publication techniques, graphic design methods and portfolio formats utilizing Adobe Creative Suite. Instruction in digital photography, scanning, printing and other methods of custom graphic publication including laser fabrication and engraving for portfolio design. Highly recommended for architecture students transferring to outside institutions or seeking employment. CSU

ARCHI-220 Architectural Design II

4 units LR

- 36 hours lecture/108 hours laboratory per term
- Prerequisite: ARCHI-121 and 135 or equivalents
- Recommended: ARCHI-136 or equivalent

This course is a second-level studio design class continuing the study of architectural design. It focuses on development of fundamental design skills utilizing concepts related to site planning and site analysis with projects of greater complexity. A continuing investigation of topics in material qualities, general methods of assembly and construction, and human factors in design is covered. Methods of presentation and design development include drawing, model making, and architectural reviews and critiques. CSU, UC

ARCHI-221 Architectural Design III

4 units LR

- 36 hours lecture/108 hours laboratory per term
- Prerequisite: ARCHI-136 (may be taken concurrently) or equivalent and ARCHI-220 or equivalent

This course is a third-level studio design class continuing the study of architectural design. It focuses on the application of advanced design skills and spatial theories to projects of greater architectural complexity. It includes design problems and projects incorporate advanced concepts of site planning, urban design, integration of structural and mechanical systems, programming and circulation. CSU, UC

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ARCHI-226 Computer Aided Drafting Design, Advanced Concepts - AutoCAD

3 units SC

- 36 hours lecture/72 hours laboratory per term
- Recommended: ARCHI-126 or ENGTC-126 or equivalent
- Note: Same as ENGTC-226. Students may petition to repeat this course when software or hardware is changed. Only the first course completed will be applied toward a degree or certificate requirement. Units for both courses will apply towards the 60 units required for the degree.

This course covers the concepts and applications of constructing digital three-dimensional (3D) models and photo-realistic renderings for presentation using AutoCAD, 3D Studio Max and Alias. Advanced techniques for surface, wireframe and solid modeling will be presented. Students will explore lighting, materials mapping and rendering as they apply to architecture, engineering and industrial design. CSU, UC (credit limits may apply to UC - see counselor)

ARCHI-244 Architectural Practice and Working Drawings I

3 units SC

- 36 hours lecture/72 hours laboratory per term
- Recommended: ARCHI-130 and CONST-144 or equivalents

This course will cover methods and processes for the interpretation and creation of architectural working drawings, connections, details and specifications. The technical concepts related to the construction of small-scale structures and their representation in construction documents will be discussed. Students will be introduced to the design review process, along with Construction Specifications Institute (CSI) format, standards of practice and graphic representation, and the role of the architect, client and local governing agencies. CSU

ARCHI-296 Internship in Occupational Work Experience Education in ARCHI

1-4 units SC

- May be repeated three times
- Variable hours
- Note: In order to enroll in the ARCHI-296 course, students must be interning or volunteering, register for the course, complete an online Employment Form, and participate in an orientation. The Employment Form can be accessed at www.dvc.edu/wrwx. Incomplete grades are not awarded for this course.

ARCHI-296 is a supervised internship in a skilled or professional level assignment in the student's major field of study or area of career interest. Under the supervision of a college instructor, students will engage in on-the-job and other learning experiences that contribute to their employability skills and occupational or educational goals. Internships may be paid, non-paid, or some partial compensation provided. Five hours work per week or seventy-five hours work per term is equal to one unit (paid) or one unit for four hours work per week or sixty hours per term (unpaid work). Students may earn up to a maximum of sixteen units; repetition allowed per Title 5 Section 55253. CSU

ARCHI-298 Independent Study

.5-3 units SC

- Variable hours
- Note: Submission of acceptable educational contract to department and Instruction Office is required.

This course is designed for advanced students who wish to conduct additional research, a special project, or learning activities in a specific discipline/subject area and is not intended to replace an existing course. The student and instructor develop a written contract that includes objectives to be achieved, activities and procedures to accomplish the study project, and the means by which the supervising instructor may assess accomplishment. CSU

ARCHI-299 Student Instructional Assistant

.5-3 units SC

- Variable hours
- Note: Applications must be approved through the Instruction Office. Students must be supervised by a DVC instructor.

Students work as instructional assistants, lab assistants and research assistants in this department. The instructional assistants function as group discussion leaders, meet and assist students with problems and projects, or help instructors by setting up laboratory or demonstration apparatus. Students may not assist in course sections in which they are currently enrolled. CSU