

# Architectural Technology

## Architectural Technology Certificates

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### Architectural Technology Certificate Specialization in Residential Architectural Technology (C40100-C2)

#### Major Requirements

ARC 116	Architectural Design Studio I (Architectural Design Studio I)	5.0
ARC 112	Construction Materials & Methods	4.0
ARC 225	Architectural Building Information Modeling I	2.0
ARC 117	Architectural Design Studio II (Architectural Design Studio II)	5.0
ACA 122	College Transfer Success	1.0
<b>Total Credits</b>		<b>17</b>

Graduates from this certificate should be able to provide support to the Green Building and Facility Management Industries. This certificate also is available to high school students enrolled in Career & College Promise.

### Architectural Technology Certificate Specialization in Sustainability (C40100-C4)

#### Major Requirements

ARC 116	Architectural Design Studio I (Architectural Design Studio I)	5.0
ARC 225	Architectural Building Information Modeling I	2.0
SST 120	Energy Use Analysis	3.0
SST 130	Modeling Renewable Energy	3.0
SST 140	Green Building and Design Concepts	3.0
<b>Total Credits</b>		<b>16</b>

### Architectural Technology Certificate Specialization in Accelerated CAD/BIM Designer Track - Level I (C40100-C5)

#### Major Requirements

ARC 116	Architectural Design Studio I (Architectural Design Studio I)	5.0
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MAT 171	Precalculus Algebra	4.0
CEG 151	Cad for Engineering Technology	3.0
ARC 225	Architectural Building Information Modeling I	2.0
ARC 114	Architectural CAD	2.0
<b>Total Credits</b>		<b>16</b>

This is the first half of a nested curriculum sequence designed to prepare students for careers in Computer Aided Drafting and/or Building Information Modeling.

### Architectural Technology Certificate Specialization in Accelerated CAD/BIM Designer Track - Level II (C40100-C6)

#### Major Requirements

BPR 130	Print Reading-Construction	3.0
ARC 226	Architectural Building Information Modeling II	2.0
DFT 154	Intro to Solid Modeling	3.0
ARC 230	Environmental Systems	4.0
ARC 197T	Seminar in	2.0
WBL 111	Work-Based Learning I	1.0
<b>Total Credits</b>		<b>15</b>

This is the second half of a nested curriculum sequence designed to prepare students for careers in Computer Aided Drafting and/or Building Information Modeling.

### Architectural Technology Certificate Specialization in CAD/BIM Designer Fast Track (C40100-C7)

#### Major Requirements

ARC 116	Architectural Design Studio I	5.0
ARC 112	Construction Materials & Methods	4.0
ARC 114	Architectural CAD	2.0
ARC 225	Architectural Building Information Modeling I	2.0
CMT 120	Codes and Inspections	3.0
WBL 111	Work-Based Learning I	1.0
<b>Total Credits</b>		<b>17</b>

### Architectural Technology Certificate Specialization in Architectural Technology Foundations (C40100-C8)

#### Major Requirements

ARC 116	Architectural Design Studio I	5.0
ENG 111	Writing and Inquiry	3.0
ACA 122	College Transfer Success	1.0
ART 111	Art Appreciation	3.0
ARC 250	Survey of Architecture	3.0
<b>Total Credits</b>		<b>15</b>

### Architectural Technology Certificate Specialization in Architectural Technology Foundations for Transfer (C40100-C9)

#### Major Requirements

ARC 116	Architectural Design Studio I	5.0
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MAT 171	Precalculus Algebra	4.0
ENG 111	Writing and Inquiry	3.0
ARC 250	Survey of Architecture	3.0
ACA 122	College Transfer Success	1.0
<b>Total Credits</b>		<b>16</b>

**ARC 111. Introduction to Architectural Technology. 3.0 Credits.**

Class-1.0. Clinical-0.0. Lab-6.0. Work-0.0

This course introduces basic architectural drafting techniques, lettering, use of architectural and engineer scales, and sketching. Topics include orthographic, axonometric, and oblique drawing techniques using architectural plans, elevations, sections, and details; reprographic techniques; and other related topics. Upon completion, students should be able to prepare and print scaled drawings within minimum architectural standards.

**ARC 112. Construction Materials & Methods. 4.0 Credits.**

Class-3.0. Clinical-0.0. Lab-2.0. Work-0.0

This course introduces construction materials and methodologies. Topics include construction terminology, traditional and alternative materials and their properties, manufacturing processes, construction techniques, and other related topics. Upon completion, students should be able to detail construction assemblies and identify construction materials and properties.

**ARC 113. Residential Architectural Technology. 3.0 Credits.**

Class-1.0. Clinical-0.0. Lab-6.0. Work-0.0

This course covers intermediate residential working drawings. Topics include residential plans, elevations, sections, details, schedules, and other related topics. Upon completion, students should be able to prepare a set of residential working drawings that are within accepted architectural standards.

Prerequisites: Take ARC 111

Corequisites: Take ARC 112

**ARC 114. Architectural CAD. 2.0 Credits.**

Class-1.0. Clinical-0.0. Lab-3.0. Work-0.0

This course introduces basic architectural CAD techniques. Topics include basic commands and system hardware and software. Upon completion, students should be able to prepare and plot architectural drawings to scale within accepted architectural standards.

**ARC 116. Architectural Design Studio I. 5.0 Credits.**

Class-2.0. Clinical-0.0. Lab-9.0. Work-0.0

This course introduces the fundamental aspects of architectural design and documentation. Emphasis is placed on a studio culture experience, prompting completion of precedent analysis and creatively solving challenges within the field of architecture through the act of making; those being executed in both two and three dimensions. Upon completion, students should be able to apply their work to the foundational principles in which architecture is rooted.

**ARC 117. Architectural Design Studio II. 5.0 Credits.**

Class-2.0. Clinical-0.0. Lab-9.0. Work-0.0

This course covers architectural vocabulary and design methods through the creation of a single or multi-family residential design project. Topics include and allow for the opportunity to interrogate cultural and environmental issues currently affecting the built environment humans inhabit while facilitating their graphic and verbal communication skills. Upon completion, students should be able to articulate, digitally and physically, the design of a small-scale building.

Corequisites: Take ARC 116

**ARC 120. Interior Design-Residential. 3.0 Credits.**

Class-1.0. Clinical-0.0. Lab-6.0. Work-0.0

This course covers principles of light construction and materials. Topics include terminology, components, and light construction codes. Upon completion, students should be able to understand light construction principles.

Prerequisites: Take ARC 111

**ARC 131. Building Codes. 3.0 Credits.**

Class-2.0. Clinical-0.0. Lab-2.0. Work-0.0

This course covers the methods of researching building codes for specific projects. Topics include residential and commercial building codes. Upon completion, students should be able to determine the code constraints governing construction projects.

Prerequisites: Take ARC 111 or ARC 112

**ARC 132. Specifications & Contracts. 2.0 Credits.**

Class-2.0. Clinical-0.0. Lab-0.0. Work-0.0

This course covers the development of written specifications and the implications of different contractual arrangements. Topics include specification development, contracts, bidding material research, and agency responsibilities. Upon completion, students should be able to write a specification section and demonstrate the ability to interpret contractual responsibilities.

Prerequisites: Take ARC 112

**ARC 133. Construction Document Analysis. 2.0 Credits.**

Class-1.0. Clinical-0.0. Lab-3.0. Work-0.0

This course covers the analysis of building construction drawings. Emphasis is placed on material identification, understanding construction details, and the relationships of building structural, mechanical, plumbing, and electrical systems. Upon completion, students should be able to analyze a set of construction drawings by identifying building construction materials and understanding construction details and engineering systems.

**ARC 141. Elementary Structures for Architecture. 4.0 Credits.**

Class-4.0. Clinical-0.0. Lab-0.0. Work-0.0

This course covers concepts of elementary structures in architecture. Topics include structural form, statics, strength of materials, structural behavior, and the relationship between structures and architectural form. Upon completion, students should be able to size simple structural elements.

Prerequisites: Take One Set: Set 1: ARC 111 and MAT 121; Set 2: ARC 111 and MAT 171

**ARC 160. Residential Design. 3.0 Credits.**

Class-1.0. Clinical-0.0. Lab-6.0. Work-0.0

This course introduces the methodology of basic residential design. Topics include residential site design, space organization and layout, residential styles, and the development of schematic design. Upon completion, students should be able to design a residence.

Prerequisites: Take ARC 111

Corequisites: Take ARC 112

**ARC 197T. Seminar in. 2.0 Credits.** Class-2.0. Clinical-0.0. Lab-0.0. Work-0.0

This course provides an opportunity for students to analyze current architectural movements, trends, and methodologies. Emphasis is placed on architectural production in various modes, including: writing, reading, thinking, and portfolio development. Students will be allowed to craft and critique their work and the work of their peers. Upon completion, students should be able to successfully analyze architectural concepts and theories through various forms of written and graphical representation.

**ARC 210. Intro to Sustain Design. 2.0 Credits.** Class-1.0. Clinical-0.0. Lab-3.0. Work-0.0

This course introduces concepts and principles related to sustainable site development and architectural design. Topics include low impact and sustainable site development, water efficiency, energy efficiency, material and resource management, indoor environmental quality, and return on investment. Upon completion, students should be able to articulate and integrate sustainable design principles into site and architectural design. Prerequisites: Take ARC 111

**ARC 212. Commercial Constr Tech. 3.0 Credits.** Class-1.0. Clinical-0.0. Lab-6.0. Work-0.0

This course introduces regional construction techniques for commercial plans, elevations, sections, and details. Topics include production of a set of commercial contract documents and other related topics. Upon completion, students should be able to prepare a set of working drawings in accordance with building codes. Prerequisites: Take ARC 225  
Corequisites: Take ARC 112

**ARC 213. Design Project. 4.0 Credits.** Class-2.0. Clinical-0.0. Lab-6.0. Work-0.0

This course provides the opportunity to design and prepare a set of contract documents within an architectural setting. Topics include schematic design, design development, construction documents, and other related topics. Upon completion, students should be able to prepare a set of commercial contract documents. This course will also introduce plumbing, mechanical (HVAC), and electrical systems for the architectural environment. Prerequisites: Take ARC 225

**ARC 214. Architectural Statics. 3.0 Credits.** Class-3.0. Clinical-0.0. Lab-0.0. Work-0.0

This course covers the concepts of elementary statics as applied to architecture. Topics include forces, resultants, and types of force system; equations of equilibrium; reactions of simple architectural structures; internal forces in architectural roof trusses; frames and beams; centroids and moments of inertia as applied to architecture. Upon completion, students should be able to solve problems which require the ability to analyze systems of forces in static equilibrium as applied to architectural forms. Prerequisites: Take all: ARC 111, ARC 112, and MAT 121

**ARC 215. Architectural Strength of Materials. 3.0 Credits.** Class-3.0. Clinical-0.0. Lab-0.0. Work-0.0

This course covers the concepts of elementary strength of materials within architecture. Topics include structural form, architectural strength of materials, structural behavior, and the relationship between structures and architectural form. Upon completion, students should be able to size simple structural elements to specific architectural forms. Prerequisites: Take all: ARC 111, ARC 112, and MAT 121

**ARC 216. Architectural Design Studio III. 5.0 Credits.** Class-2.0. Clinical-0.0. Lab-9.0. Work-0.0

This course provides students information on construction topics, building codes and standards, and project logistics for the design of a commercial architectural project. Emphasis is placed on real world constraints and considerations while articulating innovative design strategies through advanced drawing techniques. Upon completion, students should be able to execute a large-scale building design according to industry standards. Corequisites: Take ARC 117

**ARC 217. Architectural Design Studio IV. 5.0 Credits.** Class-2.0. Clinical-0.0. Lab-9.0. Work-0.0

This course is designed to allow students to collaborate in a team environment on the design of a conceptual architectural design project. Emphasis is placed on an architectural design challenge taking into considerations key elements like site, program, environment, client, and visual communication and presentation. Upon completion, student should be able to use collaborative BIM technologies, allowing a more focused understanding of professional practice with regard to design, documentation, and communication. Corequisites: Take all: ARC 216 ARC 225

**ARC 220. Advanced Architectural CAD. 2.0 Credits.** Class-1.0. Clinical-0.0. Lab-3.0. Work-0.0

This course provides file management, productivity, and CAD customization skills. Emphasis is placed on developing advanced proficiency techniques. Upon completion, students should be able to create prototype drawings and symbol libraries, compose sheets with multiple details, and use advanced drawing and editing commands. Civil3D and Microstation CAD applications will be used in this course. Prerequisites: Take ARC 114

**ARC 221. Architectural 3-D CAD. 3.0 Credits.** Class-1.0. Clinical-0.0. Lab-4.0. Work-0.0

This course introduces architectural three-dimensional CAD applications. Topics include three-dimensional drawing, coordinate systems, viewing, rendering, modeling, and output options. Upon completion, students should be able to prepare architectural three-dimensional drawings and renderings. SketchUp, Inventor, and Rhino3D are the primary applications used in this course. Prerequisites: Take ARC 114

**ARC 225. Architectural Building Information Modeling I. 2.0 Credits.** Class-1.0. Clinical-0.0. Lab-3.0. Work-0.0

This course is an introduction to the fundamentals of Building Information Modeling (BIM) as a construction documentation system. Topics include basic parametric modeling, creating new types and families of components, and using 3D models to create design drawings. Upon completion, students should be able to use BIM software to create, edit, and print rudimentary architectural 3D computer models. Focus for this course: AutoDesk Revit Architecture.

**ARC 226. Architectural Building Information Modeling II. 2.0 Credits.** Class-1.0. Clinical-0.0. Lab-3.0. Work-0.0

This course covers advanced concepts of Building Information Modeling (BIM) including complex drawing generation and inter-disciplinary collaboration. Topics include advanced parametric modeling and model analysis, inter-disciplinary coordination, design web format models, material take-off, schedules, and rendering. Upon completion, students should be able to apply BIM software to create full 3D project models and convert them to scaled working or presentation drawings.

Prerequisites: Take ARC 225

**ARC 230. Environmental Systems. 4.0 Credits.** Class-3.0. Clinical-0.0. Lab-3.0. Work-0.0

This course introduces plumbing, mechanical (HVAC), and electrical systems for the architectural environment. Topics include basic plumbing, mechanical, and electrical systems for residential and/or commercial buildings with an introduction to selected code requirements. Upon completion, students should be able to develop schematic drawings for plumbing, mechanical, and electrical systems and perform related calculations.

Prerequisites: Take One Set: Set 1: ARC 111 and MAT 121; Set 2: ARC 111 and MAT 171

**ARC 231. Architectural Presentations. 4.0 Credits.** Class-2.0. Clinical-0.0. Lab-4.0. Work-0.0

This course introduces architectural presentation techniques. Topics include perspective drawing, shadow projection, texturization, rendered plans, elevations, and other related topics. Upon completion, students should be able to present ideas graphically and do rendered presentation drawings.

Prerequisites: Take ARC 111

**ARC 235. Architectural Portfolio. 3.0 Credits.** Class-2.0. Clinical-0.0. Lab-3.0. Work-0.0

This course covers the methodology for the creation of an architectural portfolio. Topics include preparation of marketing materials and a presentation strategy using conventional and/or digital design media. Upon completion, students should be able to produce an architectural portfolio of selected projects.

Prerequisites: Take ARC 111 and ARC 114

**ARC 250. Survey of Architecture. 3.0 Credits.** Class-3.0. Clinical-0.0. Lab-0.0. Work-0.0

This course introduces the historical trends in architectural form. Topics include historical and current trends in architecture. Upon completion, students should be able to demonstrate an understanding of significant historical and current architectural styles.

**ARC 251. Advanced Survey of Architecture. 3.0 Credits.** Class-3.0. Clinical-0.0. Lab-0.0. Work-0.0

This course builds on prior knowledge of historical trends in architectural form, and explores those topics in greater depth. Topics could include historic preservation, the social and political contexts of architectural design, and design theory. Upon completion, students should be able to demonstrate a deeper understanding of significant historical and current architectural styles and theories.

Prerequisites: Take ARC 250

**ARC 262. Architectural Animation & Video. 3.0 Credits.** Class-1.0. Clinical-0.0. Lab-6.0. Work-0.0

This course covers three-dimensional architectural animation. Topics include storyboarding, rendered animation creation, audio and video input/output, and techniques for camera and object movement in and around buildings. Upon completion, students should be able to produce rendered architectural animations with sound and archive data to selected media. This course will focus on Autodesk 3DS software.

Prerequisites: Take ARC 221

**ARC 264. Digital Architecture. 2.0 Credits.** Class-1.0. Clinical-0.0. Lab-3.0. Work-0.0

This course covers multiple digital architectural techniques. Topics include spreadsheets and word processing procedures, on-line resources, modems, e-mail, image capture, multimedia, and other related topics. Upon completion, students should be able to transmit/receive electronic data, create multimedia presentations, and produce a desktop publishing document. Focus for this course will be SketchUP and Adobe PhotoShop software.

Prerequisites: Take ARC 111, minimum grade of C