

# Architecture

## Careers & Technology

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### DEGREE

A.S. — Architecture

### CERTIFICATE OF ACHIEVEMENT

Architectural Technology

### CERTIFICATE OF PROFICIENCY

Green Buildings: Environmental Design, Energy Management and Performance Based Construction

#### Program Description

This program offers students study and job-related experience in architectural drafting, construction techniques, design, rendering, and energy systems as well as opportunities to develop skills necessary for employment in the professional field of architecture. Transfer programs are articulated with California State Polytechnic University at San Luis Obispo and the University of California at Berkeley.

#### Career Opportunities

Architecture	Drafting
Inspection	Planning
Construction Administration	

*Some Career Opportunities may require more than two years of college study. Classes beyond the associate degree may be required to fulfill some Career Opportunities or for preparation for transfer to a university program.*

#### Highlights

- Participation in architecturally-related events such as the Design Village Competition at Cal Poly San Luis Obispo
- Architecture has been honored by Los Rios Community College District as one of its "Programs of Distinction."
- Special studies in environmental sustainability and energy conscious design. Participation in the Leading Edge Energy Design Competition and the United States Green Building Council Energy Competition.
- Liaison with professional organizations such as the American Institute of Architects (AIA) and the Construction Specification Institute (CSI)

#### NOTE TO TRANSFER STUDENTS:

If you are interested in transferring to a four-year college or university to pursue a bachelor's degree in this major, it is critical that you meet with a CRC counselor to select and plan the courses for your major. Schools vary widely in terms of the required preparation. The courses that CRC requires for an associate's degree in this major may be different from the requirements needed for the bachelor's degree.

**For information about the student learning outcomes for this program, see <http://www.crc.losrios.edu/pslo>**

### TRANSFER

The Architectural Transfer Program attempts to satisfy the academic background and skills necessary for a student to transfer with an advanced standing to an accredited four- or five-year program. Because programs vary considerably, a student should consult a counselor.

The course work may include the required transfer general education courses and the core courses listed below:

Architecture 300, 310, 320, 321, 322, 329, 330, 332, 334  
Construction Management Technology 310  
Architectural Design Technology 310  
Mathematics 400, 401  
Physics 411 (UC Berkeley)  
Physics 350, 360 (CSU)

A student needs to acknowledge that selection for admission to accredited Schools of Architecture is highly competitive. It is recommended that students keep a portfolio of all architectural coursework completed at CRC to present for evaluation by university program advisors. Some universities require portfolios prior to granting transfer credit or gaining admission.

### DEGREE

**A.S. — Architecture**

**CODE #1109**

The objective of this program is to develop design and job-related skills necessary for entry into the professional field of architecture. The curriculum focuses on development of critical thinking and problem solving abilities as a means to creative thinking. College preparation for a career in architecture spans several disciplines and includes the development of knowledge and competencies in areas such as: architectural history and design; visual communication and drawing; computer drafting and rendering; construction methods and materials; energy systems and an understanding of human needs and sociology as they relate to the built environment.

#### REQUIRED PROGRAM..... Units

ARCH 300	Introduction to Design Professions.....	2
ARCH 310	History of Architecture .....	3
ARCH 320	Architectural Design & Communication I .....	3.5
ARCH 321	Architectural Design & Communication II .....	3.5
ARCH 322	Architectural Design & Communication III .....	3.5
ARCH 329	Architectural Working Drawings.....	4
ARCH 330	Design Fundamentals .....	3
ARCH 332	Design Awareness.....	3
ARCH 334	Advanced Design in Three Dimensions .....	3
CMT 310	Materials of Construction.....	3
ADT 310	Architectural Computer-Aided Drawing I .....	3
<b>TOTAL UNITS REQUIRED .....</b>		<b>34.5</b>

**G.E. Graduation Requirements for this degree - see pages 20-21**

## CERTIFICATE OF ACHIEVEMENT

### Architectural Technology

CODE #1116

REQUIRED PROGRAM.....Units	
ARCH 320	Architectural Design and Communication I .....3.5
ARCH 330	Design Fundamentals .....3
ARCH 321	Architectural Design and Communication II .....3.5
ARCH 322	Architectural Design and Communication III.....3.5
ARCH 332	Design Awareness .....3
ARCH 329	Architectural Working Drawings .....4
ARCH 334	Advanced Design in Three Dimensions .....3
ARCH 310	History of Architecture .....3
CMT 310	Materials of Construction .....3
ADT 310	Architectural Computer-Aided Drawing I .....3
<b>TOTAL UNITS REQUIRED .....32.5</b>	

## CERTIFICATE OF PROFICIENCY

### Green Buildings: Environmental Design, Energy Management and Performance Based Construction

CODE #1636

The purpose of this certificate is to develop job skills and an understanding of green strategies for high performance buildings and livable communities. It is focused at students and professionals in the fields of architecture; construction; building management; construction management; building inspection; design technology; landscape; and planning, who want to acquire a comprehensive knowledge of an integrated, economic life-cycle approach to the design of the built environment. It includes study of green rating systems, material choices and environmental strategies for a livable, sustainable future.

This certificate helps to develop the knowledge base related to sustainable green buildings and environments for the careers of Architecture, Construction, Construction Management, Building Inspection, Horticulture, Landscape Architecture and Architectural Design Technology.

REQUIRED PROGRAM.....Units	
ARCH 302	Introduction to Sustainability in the Built Environment I ..... 1.5
ARCH 303	Introduction to Sustainability in the Built Environment II ..... 1.5
CMT 310	Materials of Construction.....3
ARCH 340	Introduction to Green Buildings I ..... 1.5
ARCH 341	Introduction to Green Buildings II ..... 1.5
<b>A minimum of six (6) units from the following: .....6</b>	
ARCH 332	Design Awareness (3)
ARCH 334	Advanced Design in Three Dimensions (3)
BIT 150	California Energy Code – Building Energy Efficiency Standards (3)
CONST 294	Topics in Green Building Technology (0.5 - 4)
ADT 316	Building Information Modeling (BIM) I (3)
ADT 318	Building Information Modeling (BIM) II (3)
HORT 323	Sustainable Landscape Design (1)
BIOL 350	Environmental Biology (3)
BIOL 351	Global Climate Change (3)
GEOG 302	Environmental Studies & Sustainability (3)
GEOG 305	Global Climate Change (3)
GEOG 306	Weather and Climate (3)
ECON 306	Environmental Economics (3)
CHEM 321	Environmental Chemistry (3)
<b>TOTAL UNITS REQUIRED ..... 15</b>	

## ARCHITECTURE (ARCH)

### ARCH 300

#### Introduction to Design Professions

2 Units

*Prerequisite: None*

*Course Transferable to UC/CSU*

*See UC Limitations & Counselor*

*Hours: 36 hours LEC*

This course is a comprehensive study of the professions related to the built environment including architecture, landscape architecture, construction management, construction, city and urban planning, interior design, building inspection, environmental and energy planning. Guest speakers from various design and construction professions will engage students in discussions related to their professional practice and the necessary preparation in education and experience. Each student will evaluate his/her interest and potential of success in the areas of his/her choice. The course will include an overview of architectural history, an introduction to some of the major architects and class discussion of current issues in the environmental design professions. Additional topics in the class will include: transfer, licensing requirements and environmental design vocabulary.

### ARCH 302

#### Introduction to Sustainability in the Built Environment I

1.5 Units

*Prerequisite: None*

*Course Transferable to CSU*

*Hours: 27 hours LEC*

This course, along with ARCH 303, is an overview of the process of green building, covering theory, history, state of the industry, and best practices. This course can be taken independently or consecutively with ARCH 303. The course covers various building assessment systems including LEED, Green Globes, GreenPoint Rated, etc. Topics include: the background of the green movement; high performance green and natural building design; green building assessment; the green building process and ecological design; sustainable sites including transportation, habitat, landscaping and encouraging pedestrian environments; building thermal performance and envelope; mechanical and electrical systems. It is a comprehensive look at an emerging process for economic and resource sustainability.

### ARCH 303

#### Introduction to Sustainability in the Built Environment II

1.5 Units

*Prerequisite: None*

*Course Transferable to CSU*

*Hours: 27 hours LEC*

This course, along with ARCH 302 is an overview of the process of green building, covering theory, history, state of the industry, and best practices. This course can be taken independently or consecutively with ARCH 302. The course covers various building assessment systems including LEED, Green Globes, GreenPoint Rated, etc. Topics include: the background of the green movement; high performance green and natural building design; green building assessment; the green building process and ecological design; building water conservation systems; recycling, re-use, waste management and green material selection; indoor environmental quality including air quality, daylighting, views and thermal comfort; green construction operations; building commissioning; and economic analysis of green buildings. It is a comprehensive look at an emerging process for economic and resource sustainability.

**ARCH 310****History of Architecture****3 Units***Prerequisite: None**Advisory: Eligibility for ENGWR 101**General Education: AA/AS Area I; CSU Area C1**Course Transferable to UC/CSU**See UC Limitations & Counselor**Hours: 54 hours LEC*

Architecture design theories and practices of the late 19th and 20th century to the present including the Beaux Arts, Art Nouveau, Expressionism, De Stijl international style, Fascist Ideologies, Regionism, Post World War II Amalgamations of Twentieth Century idioms and recent reactions to contemporary standardization.

**ARCH 320****Architectural Design and Communication I****3.5 Units***Prerequisite: None**Advisory: It is recommended that students enrolling in this course should have either completed a drafting course or ADT 300.**Course Transferable to UC/CSU**See UC Limitations & Counselor**Hours: 54 hours LEC ; 27 hours LAB*

This course is an introduction to the concepts and processes associated with two and three-dimensional design. A series of design projects are used to discover principles and concepts of design while simultaneously addressing the skills associated with representing envisioned ideas, objects and environments. This includes the development of freehand sketching, manual drafting and graphic skills for communication of analysis and design concepts. Students may also enroll in ARCH 325 to learn methods for digital construction of design and drawing projects assigned in ARCH 320

**ARCH 321****Architectural Design and Communication II****3.5 Units***Prerequisite: None**Advisory: It is recommended that students enrolling in this course should have completed ADT 300 or ARCH 320 or a drafting course, in order to have abilities at drafting and to understand basic drawing types of orthographic, paraline and perspective.**Course Transferable to UC/CSU**See UC Limitations & Counselor**Hours: 54 hours LEC ; 27 hours LAB*

This course is a continuation and development of the content and issues introduced in ARCH 320 plus the principles, concepts, methods and skills pertaining to the construction of shadows and reflections, physical model building, entourage and color theory. A series of design projects are used to discover principles and concepts of design while simultaneously addressing the skills associated with representing envisioned ideas, objects and environments. This includes the development of physical model making, freehand sketching, manual drafting and graphic skills for communication of analysis and design concepts. Students may also enroll in ARCH 326 to learn methods for digital construction of design and drawing projects assigned in ARCH 321.

**ARCH 322****Architectural Design and Communication III****3.5 Units***Prerequisite: None**Advisory: It is recommended that students enrolling in this course should have completed ARCH 320 or ARCH 321 or ARCH 330 in order to have abilities at design, drafting and to understand basic drawing types of orthographic, paraline and perspective.**Course Transferable to CSU**Hours: 54 hours LEC ; 27 hours LAB*

This course is a continuation and development of the content and issues introduced in ARCH 320 and 321 plus the issues, concepts, processes and skills pertaining to the analysis and design of architectural form, space and organizations. A series of design projects are used to discover principles and concepts of design while simultaneously addressing the skills associated with representing envisioned ideas, objects and environments. This includes the development of freehand sketching, manual drafting, architectural delineation and graphic skills for communication of analysis and design concepts. Students may also enroll in ARCH 327 to learn methods for digital construction of design and drawing projects assigned in ARCH 322.

**ARCH 325****Architectural Digital Design and Communication I** **2 Units***Prerequisite: None**Corequisite: ADT 302 and ARCH 320**Course Transferable to CSU**Hours: 18 hours LEC ; 54 hours LAB*

This is a studio course to explore principles, concepts, methods and skills pertaining to the digital construction of drawings employing orthographic, axonometric, oblique, and lineal perspective drawing systems to represent ideas, objects and environments.

**ARCH 326****Architectural Digital Design and Communication II** **2 Units***Prerequisite: None**Corequisite: ARCH 321**Course Transferable to CSU**Hours: 18 hours LEC ; 54 hours LAB*

This course is a continuation and development of the content and issues introduced in ARCH 325, plus the principles, concepts, methods and skills pertaining to the digital construction of shadows, digital and physical model building, entourage and color theory.

**ARCH 327****Architectural Digital Design and Communication III** **2 Units***Prerequisite: None**Corequisite: ARCH 322**Course Transferable to CSU**Hours: 18 hours LEC ; 54 hours LAB*

This course is a continuation and extension of the content and issues introduced in ARCH 325 and ARCH 326, plus the principles, concepts, methods and skills pertaining to the digital visualization and communication of quantitative and qualitative information to support analysis and conceptualization.

**ARCH 329**  
**Architectural Working Drawings** 4 Units  
*Prerequisite: None*  
*Advisory: ARCH 321 or ADT 300*  
*Course Transferable to CSU*  
*Hours: 54 hours LEC ; 54 hours LAB*  
 Introduction to residential design and construction documents. Students will design a residence and produce a complete set of architectural working drawings.

**ARCH 330**  
**Design Fundamentals** 3 Units  
*Prerequisite: None*  
*Course Transferable to UC/CSU*  
*See UC Limitations & Counselor*  
*Hours: 45 hours LEC ; 27 hours LAB*  
 Design fundamentals; study of creative problem solving techniques, two-dimensional design and graphic communication skills.

**ARCH 332**  
**Design Awareness** 3 Units  
*Prerequisite: None*  
*Advisory: ARCH 320 and 330*  
*General Education: AA/AS Area I; CSU Area C1*  
*Course Transferable to UC/CSU*  
*See UC Limitations & Counselor*  
*Hours: 54 hours LEC ; 18 hours LAB*  
 Design problems in three dimensions. Study of space, form, structure, color, materials, and their impact on our visual environment.

**ARCH 334**  
**Advanced Design in Three Dimensions** 3 Units  
*Prerequisite: None*  
*Advisory: ARCH 332*  
*Course Transferable to CSU*  
*Hours: 54 hours LEC ; 18 hours LAB*  
 Problems in three dimensional design. Beginning studies in space, form, function, and other criteria. Continuation of ARCH 332 with an introduction to functional and environmental issues.

**ARCH 340**  
**Introduction to Green Buildings I** 1.5 Units  
*Prerequisite: None*  
*Course Transferable to CSU*  
*Hours: 27 hours LEC*  
 This course is the study of theory and application of climate, energy use and comfort as determinants of architectural form in small scale buildings. Emphasis is placed on architectural methods and topics related to resource and waste reduction; site analysis; sun access; sun shading; daylighting; lighting for envelope-load dominated buildings; and sound in buildings. The course enhances students' knowledge base and preparation for design classes, ARCH 332, ARCH 334 and ARCH 341.

**ARCH 341**  
**Introduction to Green Buildings II** 1.5 Units  
*Prerequisite: None*  
*Course Transferable to CSU*  
*Hours: 27 hours LEC*

This course is the study of theory and application of climate, energy use and comfort as determinants of architectural form in small scale buildings. Emphasis is placed on architectural methods and topics related to indoor and outdoor air quality; history of energy and vernacular architecture; energy sources for buildings; heat transfer and flow for envelope-load dominated buildings; human comfort and performance; site and climate analysis; climate and strategies for buildings; psychrometry; designing for heating and cooling; and heating and cooling systems. The course enhances students knowledge base and preparation for design classes, ARCH 332, ARCH 334 and ARCH 340.

**ARCH 495**  
**Independent Studies in Architecture** 1-3 Units  
*Prerequisite: None*  
*Course Transferable to CSU*  
*Hours: 18 hours LEC ; 54 hours LAB*

**ARCH 498**  
**Work Experience in Architecture** 1-4 Units  
*Prerequisite: None*  
*Course Transferable to CSU*  
*Hours: 300 hours LAB*

This course provides students with opportunities to develop marketable skills in preparation for employment or advancement within their current job. Course content will include understanding the application of education to the workforce; completion of required forms, which document the student's progress and hours spent at the work site; and developing workplace skills and competencies. During the course of the semester, the student is required to fulfill an 18 hour orientation and 75 hours of related paid work experience, or 60 hours of unpaid work experience for one unit. An additional 75 or 60 hours of related work experience is required for each additional unit. The course may be taken again when there is new or expanded learning on the job for a maximum of 16 units.

**ARCH 499**  
**Experimental Offering in Architecture** .5-4 Units  
*Prerequisite: None*  
*Course Transferable to CSU*  
*Hours: 18 hours LEC ; 54 hours LAB*