



**SANTA CLARA COUNTY OFFICE OF EDUCATION
SANTA CLARA COUNTY REGIONAL OCCUPATIONAL PROGRAM
Serving Santa Clara and San Benito Counties**



1. COURSE TITLE – CAREER TECHNICAL EDUCATION PATHWAY/SECTOR

Architectural Design – Engineering Technology & Arts Media and Entertainment

2. CBEDS TITLE

Architectural Design

3. CBEDS NUMBER

5703

4. JOB TITLES

O*NET	TITLE
22514A	Architectural Drafter
22514B	Electronics Drafter
22514C	Civil Drafter
22514D	Mechanical Drafter
22517	Estimators and Drafters, Utilities
17-3013.00/ 17-3019.99	Structural Draftsman
	CAD operator
17-3029.99	Engineering Assistant

5. COURSE DESCRIPTION

This Architectural Design course meets the Visual and Performing Arts University of California “f” standards and emphasizes the artistry and the design of buildings and the art in architecture. Students' work grows from learning about and understanding elements of architecture and principles of design to expressing their own creativity and ideas through architectural sketches and designs and the creation of models. They use appropriate vocabulary and techniques as their knowledge of architectural styles in history and across cultures increases and as they learn to discriminate among architects, historical styles, and periods. They learn that social, political, cultural, and religious values are reflected in architectural forms. They become able to translate ideas of others and to critique designs created by themselves, their peers, and professional architects. During the year students work with several visual arts mediums, for example, a variety of pencils, watercolor, and clay as they replicate ancient and modern building aspects and design their own structures. Computer software is used as a tool available for students' creative expression of their ideas. They also recognize and appreciate the connections between architecture and other art forms as well as the connections to other academic disciplines such as history, mathematics, science, and literature.

6. HOURS

Classroom Theory/Applied	180
Community Classroom/Coop Voc Ed	90
TOTAL HOURS	270

7. RECOMMENDED PREREQUISITE

Required Must be 16 years of age or older, a junior or senior in high school, an out-of-school youth, or an adult.
Recommended Algebra, Geometry, Computer Aided Drafting, Keyboarding

8. DATE WRITTEN **January 2007**
UPDATED **November 5, 2007**

9. COURSE OUTLINE			
A. Career Preparation Skills			
Class Hours	CC/CVE Hours	GENERAL WORKPLACE SKILLS	Standards
30	Integrated throughout the course	<ul style="list-style-type: none"> • Attitude and Work Habits <ol style="list-style-type: none"> 1. Works both independently and collaboratively 2. Attends regularly and on time 3. Practices good safety procedures 4. Solves problems thinks critically and makes good decisions 5. Plans work and takes initiative 6. Demonstrates leadership and the willingness to help train others • Job Employment Skills <ol style="list-style-type: none"> 1. Develop a plan to achieve career goals 2. Complete a career portfolio 3. Use effective job search strategies 4. Perform employment research 5. Complete job application and resume 6. Develop effective interviewing and follow-up skills. 7. Demonstrate an awareness of importance of lifelong learning. 	<p>CPS: Personal Skills; Interpersonal Skills</p> <p>SCANS: Personal Qualities; Interpersonal Qualities</p>

Sources:
 CPS - *Career Preparation Standards*. California Department of Education and WestEd
 SCANS - *What Work Requires of Schools: A SCANS Report of America 2000*.
 The Secretary's Commission on Achieving Necessary Skills, Publication of the US Dept. of Labor, June 1991.
Career Technical Education Model Curriculum Standards. California Department of Education. May 2005

B. Career Technical Skills						
Class Hours	CC/CVE Hours	CONTENT AREA SKILLS	Foundation Standards	Mention - M Reinforced - R Taught - T	CTE Pathway Standards	Mention - M Reinforced - R Taught - T
5		I. Orientation and Review	* See attached pages that follow			
		A. Overview of the field of Architectural Design B. Classroom procedures 1. Goals 2. Objectives 3. Requirements 4. Equipment C. Safety Unit 1. Review of safety rules and emergency guideline	LS 1.8 6.0	M R	A1.1,2 A2.1	M T M T R
15	Not Applicable	II. Advanced Architectural Design				
		A. Background information B. Historical styles – past and contemporary C. Architectural style D. Elements of design E. Principles of design	R2.1 R2.6 W1.5 H11.5.7 H11.7.6 H11.8 LS 1.8	M R	A1.2 A1.1,4 A3.1 A2.2 A2.1	T
20		III. Advanced Architectural Fundamentals				
		A. Instruments review B. Computer aided design systems C. Computer aided design programs D. Advanced architectural design conventions used to create drawings such as non-isometric lines, arches, domes, cylinders, triangles, cones	R2.1 R2.6 W1.8 LS 1.9 MR 2.1 MR 2.7	T R	A6.0 A6.1,2	R T R T

Career Technical Skills						
Class Hours	CC/CVE Hours	CONTENT AREA SKILLS	Foundation Standards	Mention - M Reinforced - R Taught - T	CTE Pathway Standards	Mention - M Reinforced - R Taught - T
20	Not Applicable	IV. Design Concepts	* See attached pages that follow			
		<ul style="list-style-type: none"> A. Client Needs B. Aesthetics C. Text and design principles <ul style="list-style-type: none"> 1. Balance 2. Texture 3. Proportion 4. Color harmonies D. Shape and form E. Environmental and functional design <ul style="list-style-type: none"> 1. Solar orientation 2. Efficient energy use 3. Ergonomic and ecological planning F. Design considerations <ul style="list-style-type: none"> 1. Function 2. Location 3. Décor 4. Size 5. Shape 6. Other considerations 	LS 1.8 R2.6 W1.5 WOC1.4		A1.1 A2.1,4 A4.6 A1.2 A10.1 A10.2 A10.3 A10.4 A10.5 A3.0,1 A3.2	T

Career Technical Skills						
Class Hours	CC/CVE Hours	CONTENT AREA SKILLS	Foundation Standards	Mention - M Reinforced - R Taught - T	CTE Pathway Standards	Mention - M Reinforced - R Taught - T
35	Not Applicable	V. Advanced Architectural Drawings	* See attached pages that follow			
		A. Design process methods to combine elements <ol style="list-style-type: none"> 1. Composite 2. Functional 3. Effectiveness B. Plans <ol style="list-style-type: none"> 1. Floor plans 2. Elevations 3. Sectional 4. Detail 5. Cabinetry 6. Site development C. Foundations and construction D. Framing E. Electrical and mechanical F. Checking and using support services <ol style="list-style-type: none"> 1. Interpreting drawings 2. Details 3. Documents <ol style="list-style-type: none"> a. Schedules b. Specifications c. Cost estimates d. Financial plans e. Codes f. Contracts 4. Working drawings 	R2.1 W 1.8 LS 1.8 NS 1.2 MR 2.1 AI 8.0 G 11.0 WOC 1.4 NS 1.2 NS 1.3 MR 2.1	M R M R M R	A7.1,2 A7.3,4 A1.2 A4.1,2 A4.3,4 A3.5,6 A4.2,5 A5.2,3 A7.1,2 A7.3,4 A4.3 A4.4 A7.1 A7.4 A7.2 A3.4 A5.4 A7.1	T R T R T R T

Career Technical Skills						
Class Hours	CC/CVE Hours	CONTENT AREA SKILLS	Foundation Standards	Mention - M Reinforced - R Taught - T	CTE Pathway Standards	Mention - M Reinforced - R Taught - T
10	Not Applicable	VIII. Career Pathways				
		A. Careers relating to Architectural Design B. Jobs, Internships and further training C. Portfolio Development D. Resume, cover letter, interview practice	Reading 2.6 Writing 1.5 2.5 2.6 WOX 1.4 LS 1.8 USH 11.11.3 3.0 7.0 8.0 9.0 10.0	M R	A8.1,2 A8.3	R
180	0	Total Hours				

C. Expected Student Proficiencies	
<p>ATTITUDE AND WORK HABITS Attendance Punctuality/Reliability Utilizes Time effectively Cooperates/Works Effectively With Others</p> <p>COMPUTER GRAPHICS OPERATION CAD Fundamentals/Command Structure Symbols and Characters Keyboard and Screen Menu Usage Utility Routines/File Mgmt/MS-DOS Computer Terms, Vocabulary and Definitions Identification, Use, and Care-Hardware/Software Input Devices/Output Devices</p> <p>BASIC ENTITY CREATION Lines, Circles, Arcs, and Text Cartesian Coordinates-Absolute/Relative Popular Coordinate Input Oblique and Hatching Insertions</p> <p>ENTITY MODIFICATION AND EDITING Erase, Remove, Undo, Add, and Change Array, Copy, Move, Rotate and Mirror Break, Divide, Trim, Extend and Stretch Fillet and Chamfers</p> <p>SCREEN CONTROL COMMANDS Zoom, Pan, Windows and Views Layers, Color, Linetypes and Related Functions Limits, Grids, Snaps Object Snap Multi-Viewports</p>	<p>CAD DIMENSIONING TECHNIQUES Horizontal and Vertical Insertion Diameters, Raddi, Leaders and Angular Insertion Override and Special Techniques Use of Dimensioning Variable Tolerancing and Limit Dimension Generation Baseline and continuous Generation</p> <p>SYMBOLS LIBRARIES Work Groups Block and Wblock Creation Block Insertion Procedure</p> <p>THREE-DIMENTIONAL CAD Elevation and Thickness Using the X, Y, Z axes Rotating and Coordinate Input 3D Extrusion Drafting 3D Drafting in the User Coordinate System (UCS) 3D Wireframe Creation 3D Solid Modeling</p> <p>UTILITY MENUS-SAVE AND PLOTTING Using Quit, Save and End Scaling and Positioning Pen Selection and Speeds Determining Sheet Sizes and Scale Use of Laser Printers Use of care of Plotters</p> <p>CAD/CAM EXPERIENCE 2D Geometry Generation Pocket and Island</p>

10. ADDITIONAL RECOMMENDED/OPTIONAL ITEMS

A. **Academic credit:** One year or 10 units of fine art credit

B. **Other – n/a**

	ARTICULATION	None
X	UC APPROVAL	“f” Visual and Performing Arts
X	INDUSTRY CERTIFICATION	NOCTI Assessment

C. **Instructional Strategies:**

- | | |
|--|--|
| <ul style="list-style-type: none"> • Lecture • Demonstration • Design problems and vocabulary • Critical comparison and aesthetic comparison • Readings • Project-based learning | <ul style="list-style-type: none"> • Guest presentations by local architects. • Group projects • Computer programs • Field trips • Videos • Internet research • Peer learning |
|--|--|

D. Instructional Materials: Core: Drafting and Design for Architecture by Dana J. Hepler and Paul Ross Wallach, Thompson Delmar Learning, 2005

Supplemental: Architecture: Form, Space and Order by Francis D. K. Ching, John Wiley & Sons, 1996

Software: AutoCAD 2008 Lt, Envisioner Architectural and possibly Sketch-up.

11. FOUNDATION STANDARDS ALIGNED		* CAHSEE Test Items
1.0 Academics		
Students understand the academic content required for entry into postsecondary education and employment in the Engineering and Design sector. <i>(The standards listed below retain in parentheses the numbering as specified in the mathematics, science, history–social science, and visual and performing arts content standards adopted by the State Board of Education.)</i>		
Math		
*	1.2 Add, subtract, multiply, and divide rational numbers (integers, fractions, and terminating decimals) and take positive rational numbers to whole-number powers.	
*	1.3 Convert fractions to decimals and percents and use these representations in estimations, computations, and applications.	
*	2.1 Use estimation to verify the reasonableness of calculated results.	
Algebra I		
*	8.0 Students understand the concepts of parallel lines and perpendicular lines and how those slopes are related. Students are able to find the equation of a line perpendicular to a given line that passes through a given point.	
Geometry		
	10.0 Students compute areas of polygons, including rectangles, scalene triangles, equilateral triangles, rhombi, parallelograms, and trapezoids.	
	11.0 Students determine how changes in dimensions affect the perimeter, area, and volume of common geometric figures and solids.	
	16.0 Students perform basic constructions with a straightedge and compass, such as angle bisectors, perpendicular bisectors, and the line parallel to a given line through a point off the line.	
History/Social Science		
	1. Students compare the present with the past, evaluating the consequences of past events and decisions and determining the lessons that were learned.	
	4. Students relate current events to the physical and human characteristics of places and regions.	
	4. Students construct and test hypotheses; collect, evaluate, and employ information from multiple primary and secondary sources; and apply it in oral and written presentations.	
	5. Students analyze human modifications of landscapes and examine the resulting environmental policy issues.	
	6. Students conduct cost-benefit analyses and apply basic economic indicators to analyze the aggregate economic behavior of the U.S. economy.	
2.0 Communications		
Students understand the principles of effective oral, written, and multimedia communication in a variety of formats and contexts. <i>(The standards listed below retain in parentheses the numbering as specified in the English–language arts content standards adopted by the State Board of Education.)</i>		
Reading		
*	2.1 Compare and contrast the features and elements of consumer materials to gain meaning from documents (e.g., warranties, contracts, product information, instruction manuals).	
	2.2 Analyze the way in which clarity of meaning is affected by the patterns of organization, hierarchical structures, repetition of the main ideas, syntax, and word choice in the text.	
	2.3 Verify and clarify facts presented in other types of expository texts by using a variety of consumer, workplace, and public documents.	
	2.4 Make warranted and reasonable assertions about the author's arguments by using elements of the text to defend and clarify interpretations.	
	2.6 Use information from a variety of consumer, workplace, and public documents to explain a situation or decision and to solve a problem.	
	2.6 Demonstrate use of sophisticated learning tools by following technical directions (e.g., those found with graphic calculators and specialized software programs and in access guides to World Wide Web sites on the Internet).	
Writing		
	1.1 Demonstrate an understanding of the elements of discourse (e.g., purpose, speaker, audience, form) when completing narrative, expository, persuasive, or descriptive writing assignments.	
*	1.2 Use precise language, action verbs, sensory details, appropriate modifiers, and the active rather than the passive voice.	

- 1.2 Use point of view, characterization, style (e.g., use of irony), and related elements for specific rhetorical and aesthetic purposes.
- 1.4 Enhance meaning by employing rhetorical devices, including the extended use of parallelism, repetition, and analogy; the incorporation of visual aids (e.g., graphs, tables, pictures); and the issuance of a call for action.
- 1.5 Use language in natural, fresh, and vivid ways to establish a specific tone. (11th grade CST Test Item)
- 1.5 Use correct punctuation and capitalization.
- 1.6 Revise writing for word choice; appropriate organization; consistent point of view; and transitions between paragraphs, passages, and ideas.
- 2.3 Write reflective compositions:
- Explore the significance of personal experiences, events, conditions, or concerns by using rhetorical strategies (e.g., narration, description, exposition, persuasion).
 - Draw comparisons between specific incidents and broader themes that illustrate the writer's important beliefs or generalizations about life.
 - Maintain a balance in describing individual incidents and relate those incidents to more general and abstract ideas.
- 2.5 Write job applications and resumes:
- Provide clear and purposeful information and address the intended audience appropriately.
 - Use varied levels, patterns, and types of language to achieve intended effects and aid comprehension.
 - Modify the tone to fit the purpose and audience.
 - Follow the conventional style for that type of document (e.g., resume, memorandum) and use page formats, fonts, and spacing that contribute to the readability and impact of the document.
- 2.6 Deliver multimedia presentations:
- Combine text, images, and sound and draw information from many sources (e.g., television broadcasts, videos, films, newspapers, magazines, CD-ROMs, the Internet, electronic media-generated images).
 - Select an appropriate medium for each element of the presentation.
 - Use the selected media skillfully, editing appropriately and monitoring for quality.
 - Test the audience's response and revise the presentation accordingly.

Written & Oral English Language Conventions

- 1.0 Written and Oral English Language Conventions
Students write and speak with a command of standard English conventions.
- 1.1 Demonstrate control of grammar, diction, and paragraph and sentence structure and an understanding of English usage.
- 1.2 Produce legible work that shows accurate spelling and correct punctuation and capitalization.

Listening & Speaking

- 1.1 Recognize strategies used by the media to inform, persuade, entertain, and transmit culture (e.g., advertisements; perpetuation of stereotypes; use of visual representations, special effects, language).
- 1.3 Interpret and evaluate the various ways in which events are presented and information is communicated by visual image makers (e.g., graphic artists, documentary filmmakers, illustrators, news photographers).
- 1.4 Use rhetorical questions, parallel structure, concrete images, figurative language, characterization, irony, and dialogue to achieve clarity, force, and aesthetic effect.
- 1.6 Use logical, ethical, and emotional appeals that enhance a specific tone and purpose.
- 1.7 Use appropriate rehearsal strategies to pay attention to performance details, achieve command of the text, and create skillful artistic staging.
- 1.10 Evaluate when to use different kinds of effects (e.g., visual, music, sound, graphics) to create effective productions.
- 2.2 Deliver oral reports on historical investigations:
- Use exposition, narration, description, persuasion, or some combination of those to support the thesis.
 - Analyze several historical records of a single event, examining critical relationships between elements of the research topic.
 - Explain the perceived reason or reasons for the similarities and differences by using information derived from primary and secondary sources to support or enhance the presentation.
 - Include information on all relevant perspectives and consider the validity and reliability of sources.
- 2.4 Deliver multimedia presentations:
- Combine text, images, and sound by incorporating information from a wide range of media, including films, newspapers, magazines, CD-ROMs, online information, television, videos, and electronic media-generated images.

- b. Select an appropriate medium for each element of the presentation.
- c. Use the selected media skillfully, editing appropriately and monitoring for quality.
- d. Test the audience's response and revise the presentation accordingly.

2.5 MULTIMEDIA

Understand the importance of technical and computer-aided design and drawing technologies essential to the language of the engineering and design industry, including reading, writing, interpreting, and creating drawings, sketches, and schematics using engineering and design industry conventions and standards; interpreting and understanding detailed information provided from available technical documents, both print and electronic, and from experienced people; and using computers, calculators, multimedia equipment, and other devices in a variety of applications.

3.0 CAREER PLANNING & MANAGEMENT

Students understand how to make effective decisions, use career information, and manage personal career plans:

- 3.1 Know the personal qualifications, interests, aptitudes, knowledge, and skills necessary to succeed in a career.
- 3.2 Understand the scope of career opportunities and know the requirements for education, training, and licensure.
- 3.3 Develop a career plan that is designed to reflect career interests, pathways, and postsecondary options.
- 3.4 Understand the role and function of professional organizations, industry associations, and organized labor in a productive society.
- 3.5 Understand the past, present, and future trends that affect careers, such as technological developments and societal trends, and the resulting need for lifelong learning.
- 3.6 Know important strategies for self-promotion in the hiring process, such as job applications, résumé writing, interviewing skills, and preparation of a portfolio.
- 3.7 Understand the nature of entrepreneurial activities.

4.0 TECHNOLOGY

Students know how to use contemporary and emerging technological resources in diverse and changing personal, community, and workplace environments:

- 4.1 Understand past, present, and future technological advances as they relate to a chosen pathway.
- 4.2 Understand the use of technological resources to gain access to, manipulate, and produce information, products, and services.
- 4.3 Understand the influence of current and emerging technology on selected segments of the economy.

5.0 PROBLEM SOLVING & CRITICAL THINKING

Students understand how to create alternative solutions by using critical and creative thinking skills, such as logical reasoning, analytical thinking, and problem-solving techniques:

- 5.1 Apply appropriate problem-solving strategies and critical thinking skills to work-related issues and tasks.
- 5.2 Understand the systematic problem-solving models that incorporate input, process, outcome, and feedback components.
- 5.3 Use critical thinking skills to make informed decisions and solve problems.

6.0 HEALTH & SAFETY

Students understand health and safety policies, procedures, regulations, and practices, including the use of equipment and handling of hazardous materials:

- 6.1 Know the policies, procedures, and regulations regarding health and safety in the workplace, including employers' and employees' responsibilities.
- 6.2 Understand the critical elements of health and safety practices related to storing, cleaning, and maintaining tools, equipment, and supplies.

7.0 RESPONSIBILITY & FLEXIBILITY

Students know the behaviors associated with the demonstration of responsibility and flexibility in personal, workplace, and community settings:

- 7.1 Understand the qualities and behaviors that constitute a positive and professional work demeanor.
- 7.2 Understand the importance of accountability and responsibility in fulfilling personal, community, and workplace roles.
- 7.3 Understand the need to adapt to varied roles and responsibilities.
- 7.4 Understand that individual actions can affect the larger community.

8.0 ETHICS & LEGAL RESPONSIBILITY

Students understand professional, ethical, and legal behavior consistent with applicable laws, regulations, and organizational norms:

- 8.1 Know the major local, district, state, and federal regulatory agencies and entities that affect the industry and how they enforce laws and regulations.
- 8.2 Understand the concept and application of ethical and legal behavior consistent with workplace standards.

8.3 Understand the role of personal integrity and ethical behavior in the workplace.

9.0 LEADERSHIP & TEAMWORK

Students understand effective leadership styles, key concepts of group dynamics, team and individual decision making, the benefits of workforce diversity, and conflict resolution:

- 9.1 Understand the characteristics and benefits of teamwork, leadership, and citizenship in the school, community, and workplace settings.
- 9.2 Understand the ways in which preprofessional associations, such as SkillsUSA, and competitive career development activities enhance academic skills, promote career choices, and contribute to employability.
- 9.3 Understand how to organize and structure work individually and in teams for effective performance and the attainment of goals.
- 9.4 Know multiple approaches to conflict resolution and their appropriateness for a variety of situations in the workplace.
- 9.5 Understand how to interact with others in ways that demonstrate respect for individual and cultural differences and for the attitudes and feelings of others.
- 9.6 Understand how to organize, conduct, lead, and participate in student-centered activities and events through student-based organizations.

10.0 TECHNICAL KNOWLEDGE & SKILLS

Students understand the essential knowledge and skills common to all pathways in the Engineering and Design sector:

- 10.1 Use and maintain industrial and technological products and systems.
- 10.2 Understand the importance of technical and computer-aided technologies essential to the language of the engineering and design industry.
- 10.3 Understand how to use, adjust, maintain, and troubleshoot the equipment and tools of the engineering and design industry in a safe, effective, and efficient manner.
- 10.4 Acquire, store, allocate, and use materials and space efficiently.
- 10.5 Understand the role of the engineering and design industry in the California economy.
- 10.6 Understand and apply the appropriate use of quality control systems and procedures.
- 10.7 Understand the need and process to obtain and maintain industry-standard, technical certifications and affiliations with professional organizations, including the American Society for Engineering Education, the Accreditation Board for Engineering and Technology, and the American Society of Civil Engineers.
- 10.8 Understand the need to obtain and maintain industry-standard, technical certifications significant to a particular industry.

11.0 DEMONSTRATION & APPLICATION

Students demonstrate and apply the concepts contained in the foundation and pathway standards.

11. ARCHITECTURAL DESIGN – ENGINEERING DESIGN

A1.0 Students understand the ways in which architecture is shaped by history and know significant events in the history of architecture:

- A1.1 Know significant historical architectural and structural projects and their effects on society.
- A1.2 Understand the development of architectural and structural systems in relation to aesthetics, efficiency, and safety.

A2.0 Students know the theoretical, practical, and contextual issues that influence design:

- A2.1 Understand the ways in which socio-cultural conditions and issues influence architectural design.
- A2.2 Understand the theoretical and practical effects of human and physical factors and cost analysis on the development of architectural designs.
- A2.3 Use the necessary equipment for producing an architectural design and the appropriate methods and techniques for employing the equipment.
- A2.4 Use freehand graphic communication skills to represent conceptual ideas, analysis, and design concepts.

A3.0 Students demonstrate the relationship between architecture and the external environment:

- A3.1 Understand the influence of community context and local requirements on architectural design.
- A3.2 Develop a site analysis that considers passive energy techniques, sustainability issues, and landscaping.
- A3.3 Develop a preliminary proposal for a simulated architectural design.
- A3.4 Develop a complete set of architectural plans and drawings.

A4.0 Students understand the mechanics and properties of structural materials:

- A4.1 Understand the integration of architectural factors, such as soil mechanics, foundation design, engineering materials, and structure design.
- A4.2 Understand various forces that bear on and within structures, including axial force, shear, torsion, and momentum.
- A4.3 Know the various components of structures, including lighting; heating, ventilating and air-conditioning (HVAC); mechanical; electrical; plumbing; communication; security; and vertical transportation systems.
- A4.4 Develop a stress analysis chart of a typical structural component.
- A4.5 Evaluate available building materials (e.g., steel and wood) by considering their properties and their effect on building form.
- A4.6 Develop a preliminary building plan by using the appropriate materials.

A5.0 Students demonstrate methods used to analyze simple structures:

- A5.1 Evaluate load transfer mechanisms.
- A5.2 Understand stress-strain relationships of building structures.
- A5.3 Understand structural design considerations, including load-bearing relationships of shear walls, columns, and beams.
- A5.4 Design a simple structure by using structural analysis principles.

A6.0 Students know the use of computer-aided drafting and design (CADD) in developing architectural designs:

- A6.1 Know various computer programs that are commonly used in architectural design and rendering.
- A6.2 Use Architectural CAD software to develop a preliminary architectural proposal.

A7.0 Students demonstrate how to systematically complete an architectural project:

- A7.1 Develop, read, and understand architectural and construction plans, drawings, diagrams, and specifications.
- A7.2 Estimate the materials needed for a project by reading an architectural drawing.
- A7.3 Plan the sequence of events leading to an architectural project.
- A7.4 Develop a process to record the progress of a project.

A8.0 Students understand the methods of creating both written and digital portfolios:

- A8.1 Develop a binder of representative student work for presentation.
- A8.2 Produce a compact disc, Web site, or other digital-media portfolio.
- A8.3 Give an effective oral presentation of a portfolio.

13. ARCHITECTURAL DESIGN – VISUAL AND PERFORMING ARTS PATHWAY STANDARDS**A9.0 Students know the effective use of architectural and structural equipment:**

- A9.1 Use the appropriate methods and techniques for employing architectural and structural equipment.
- A9.2 Apply conventional architectural and structural processes and procedures accurately, appropriately, and safely.
- A9.3 Apply the concepts of architectural and structural engineering to the tools, equipment, projects, and procedures of the Architectural Pathway

A10.0 Students use the sketching and modeling process used in concept development:

- A10.1 Understand the process of producing proportional two- and three-dimensional sketches and designs.
- A10.2 Use sketching techniques as they apply to a variety of architectural and engineering models.
- A10.3 Use freehand graphic communication skills to represent conceptual ideas, analysis, and design concepts.
- A10.4 Use various medium when creating architectural sketches including: various pencils, charcoal, pen and ink, water color and tempera.
- A10.5 Use architectural models to evaluate design concepts. utilize: clay, wood, foam board and natural materials to create models.

LEGEND FOR REFERENCE OF ACADEMIC STANDARDS

Parenthetical notation preceding the content standard item refers to the grade level for the standard. i.e. (8) refers to grade 8, (9-10) refers to grades 9 & 10.

Example: (8) W2.1 refers to the Eighth Grade Writing Standard Item 2.1

English-Language Arts:

R Reading
W Writing
WOC Written & Oral Conventions
LS Listening & Speaking

CRP: Connections, Relationships,
Proficient

CRA: Connections, Relationships,
Advanced

Mathematics:

NS Number Sense
AF Algebra & Functions
SDP Statistics, Data Analysis & Probability
MR Mathematical Reasoning
MG Measurement & Geometry
AI Algebra I
G Geometry
AII Algebra II
P&S Probability & Statistics
APP&S Advanced Placement Probability &
Statistics
C Calculus

ELA: English-Language Arts with in VPA

ELA- LRA: Literary Response and Analysis

ELA-WSA: Writing Strategies &
Applications

ELA-WOELC: Written & Oral English
Language Conventions

Science:

PH Physics
CH Chemistry
ES Earth Science
I&E Investigation and Experimentation

Sectors

AME Arts, Media and Entertainment
BTC Building Trades and Construction
ECDFS Education, Child Development &
Family Services
EU Energy & Utilities
ED Engineering & Design
FID Fashion and Interior Design
FAB Finance and Business
HSMT Health Science & Medical Technology
HTR Hospitality, Tourism & Recreation
IT Information Technology
MPD Manufacturing and Product
Development
MSS Marketing, Sales, & Services
PS Public Services
T Transportation

History-Social Science:

WH World History, Culture and Geography
USH United States History and Geography
AD American Democracy
ECON Economics

Visual and Performing Arts:

APP: Artistic Perception Proficient Level
APA: Artistic Perception Advanced
CEP: Creative Expression Proficient
CEA: Creative Expression Advanced
HCCP: Historical & Cultural Proficient
HCCA: Historical & Cultural Advanced
AVP: Aesthetic Valuing Proficient
AVA: Aesthetic Valuing Advanced