

Colorado CTE Course – Scope and Sequence

Course Name	Fundamentals of Architecture and Construction	Course Details		.5 (Middle school level 2)
		Course = 0.50 Carnegie Unit Credit		
Course Description	Fundamentals of Architecture and Construction is a course intended to give students a general knowledge of the architecture and construction industry. Emphasis is placed on safety, measuring practices, basic drafting and construction skills, introduction to CAD, and terminology. Competencies for the co-curricular student organization, SkillsUSA, can be an integral component of this class.			
Note:	This is a suggested scope and sequence for the course content. The content will work with any textbook or instructional resource. If locally adapted, make sure all competencies are covered.			
SCED Identification #		Schedule calculation based on 60 calendar days of a 90-day semester. Scope and sequence allows for additional time for guest speakers, student presentations, field trips, remediation, or other content topics.		
All courses taught in an approved CTE program must include Essential Skills embedded into the course content. The Essential Skills Framework for this course can be found at https://www.cde.state.co.us/standardsandinstruction/essentialskills				
Instructional Unit Topic	CTE or Academic Standard Alignment	Competency / Performance Indicator	Outcome / Measurement	CTSO Integration
Career exploration in Architecture and Construction		Identify the careers related to architectural drawing and construction professions.		SkillsUSA integration throughout
			Identify careers in the architecture and construction fields.	
			Identify the apprenticeship needed for a specified career	
			Identify the professional organizations related to the architecture and construction fields.	
Safety practices in architectural and construction fields		Students will identify safety practices in the architectural and construction fields.		
			Comply with all applicable basic Occupational Safety and Health	

				Administration (OSHA) rules and regulations.	
				Demonstrate knowledge of use and care of personal protective equipment.	
				Describe personal and jobsite safety rules and regulations that maintain safe and healthy work environments and work ethics.	
Basic drafting and construction skills			Students will understand and apply basic drafting and construction skills		
				Demonstrate knowledge of reading a ruler.	
				Demonstrate knowledge of blueprint terms, components, and symbols.	
				Identify line types	
Basic Plans			Draw basic plans by hand		
				Draw plans and corresponding elevations, sections and details.	
				Apply appropriate architectural scales to drawings.	
				Apply basic building codes in drawings.	
				Create door, window and finish schedules.	
Drawings			Read civil, architectural and mechanical, electrical and plumbing (MEP) drawings		
				Locate the different plans within construction documents set, identify defining features and state the importance of these plans.	
				Name types of careers associated with the development of civil, architectural, and mechanical, electrical and plumbing (MEP) drawings.	

CAD Systems			Demonstrate the skills and knowledge needed to use a CAD system		
				Identify hardware components associated with a CAD system.	
				Demonstrate the ability to set up a drawing using CAD.	
				Use basic CAD commands to create drawings.	
				Demonstrate the correct procedure for plotting CAD drawings.	
Career exploration in Construction pathway			Investigate careers and entry requirements within the construction pathway		
				Describe careers in design/preconstruction (e.g. managers - project managers, project engineers, estimators, superintendents; sub-contractors and tradespersons - carpenters, masons, electricians, plumbers, HVAC technicians; etc.)	
				Explain educational and training pathways available for these careers.	
				Research and present information on a construction career including roles and responsibilities, opportunities for employment and the requirements for education and training.	
Planning construction project			Plan the construction of a model or architectural detail from a set of plans		
				Calculate material quantities and costs.	
				Determine the critical path as a progression of construction activities.	
				Draw a bar chart depicting construction schedule	
Implementing construction project			Construct a model or architectural detail from plans and specifications		

				Use appropriate tools while demonstrating safe work practices.	
				Apply proper cutting and fastening techniques for basic model materials.	
Understanding sustainability issues for construction			Explain sustainability issues related to the design, construction, and maintenance of the built environment		
				Describe the impact of the construction industry on the natural environment.	
				Identify sustainable alternatives to conventional practices.	
				Identify specific practices that can lessen adverse impacts on the environment.	