

PROGRAM CONCENTRATION: Architecture, Construction, Communications, & Transportation

COURSE TITLE: Fundamentals of Architecture and Construction – Seventh Grade

COURSE DESCRIPTION:

The Fundamentals of Architecture and Construction course is developed to enhance a student’s understanding of careers and essential introductory skills in the architecture and construction fields. Emphasis is also placed on orthographic projections and sketching, and basic understanding of floor plans. Competencies for the co-curricular student organization, SkillsUSA, are integral components of the class.

CRITICAL COMPONENTS:

MSACCT-FAC7-1: Students will identify specific jobs related to the architectural drawing and construction professions.

- a) Identify specific jobs under a pathway in the architecture or construction field.
- b) Identify education and training required for a specific career in architecture or construction.
- c) Identify salary for a specific job.

ACADEMIC STANDARDS:

ELA7R2: The student understands and acquires new vocabulary and uses it correctly in reading and writing.

ELA7W3: The student uses research and technology to support writing.

SAMPLE TASKS:

- Research a specific job related to the architectural or construction profession.
- Research architecture and construction careers at www.occsupplydemand.org in Georgia.
- Write a report on a specific job related to the architectural or construction profession.
- List the different salaries for different jobs.

MSACCT-FAC7-2: Students will demonstrate the knowledge and skills needed for safety in the architectural and construction fields.

- a) Demonstrate safety standards in the classroom.
- b) Demonstrate safety standards needed in architectural and construction fields.
- c) Understand how to use and maintain tools.

ACADEMIC STANDARDS:

S7CS2: Students will use standard safety practices for all classroom laboratory and field investigations.

SAMPLE TASKS:

- Practice safety standards in the classroom.
- Research safety standards needed in architectural and construction fields.
- Copy rules and regulations on each tool in the lab.
- Demonstrate the proper usage of each tool in the lab.
- Demonstrate the proper maintenance of each tool in the lab.

MSACCT-FAC7-3: Students will exhibit the ability to read and draw using the proper scale.

- a) Demonstrate knowledge of using an architectural scale.
- b) Demonstrate knowledge of reading measurements on a given blueprint.
- c) Understand what scale to use on a specific drawing (floor plan, site plan, elevation, and sections).

ACADEMIC STANDARDS:

M7P1: Students will solve problems (using appropriate technology).

M7G3: Students will use the properties of similarity and apply these concepts to geometric figures.

M7P5: Students will represent mathematics in multiple ways.

SAMPLE TASKS:

- Worksheet on measuring lines using 1", ½", ¼", and 1/8" scales
- Use an existing blueprint to measure walls using the scale of ¼" = 1'-0".
- Worksheet on blueprint reading
- Students will work with blueprints to determine wall dimensions.
- Students create models from blueprints using scale.

MSACCT-FAC7-4: Students will demonstrate an understanding of technical sketching.

- a) Understand the different types of lines used in technical sketching.
- b) Identify the principal views in an orthographic projection.
- c) Demonstrate the correct procedure for sketching orthographic projections.

ACADEMIC STANDARDS:

M7G3: Students will use the properties of similarity and apply these concepts to geometric figures.

M7G4: Students will further develop their understanding of three-dimensional figures.

M7P1: Students will solve problems (using appropriate technology).

SAMPLE TASKS:

- Classroom discussion on orthographic projections
- Worksheet on orthographic projections
- Sketch the different types of lines used in sketching.
- Sketch the three principal views for given drawings.

MSACCT-FAC7-5: Students will demonstrate the skills and knowledge needed to use a CAD system.

- a) Identify hardware components associated with a CAD system.
- b) Demonstrate the ability to set up a drawing using CAD.
- c) Use basic CAD commands to create drawings.
- d) Demonstrate the correct procedure for plotting CAD drawings.

ACADEMIC STANDARDS:

M7P1: Students will solve problems (using appropriate technology).

M7P5: Students will represent mathematics in multiple ways.

SAMPLE TASKS:

- Discussion on CAD system hardware
- Show how to set up a CAD drawing.
- Practice using CAD commands.
- Create simple drawings on a CAD system.
- Plot drawings produced on CAD.

MSACCT-FAC7-6: Students will demonstrate an understanding of residential floor plans.

- a) Demonstrate how to read a floor plan.
- b) Identify symbols used on a residential floor plan.
- c) Draw a residential floor plan.
- d) Design and build a residential floor plan.

ACADEMIC STANDARDS:

M7P4: Students will make connections among mathematical ideas and to other disciplines.

M7P5: Students will represent mathematics in multiple ways.

SAMPLE TASKS:

- Classroom discussion on floor plans and need for common terms, symbols.
- Classroom discussion on symbols (doors, windows, appliances, and fixtures) used on residential floor plans.
- Students will draw a residential floor plan using the correct scale and symbols.

MSACCT-FAC7-7: Students will participate in SkillsUSA activities.

- a) Establish a SkillsUSA chapter.
- b) Hold SkillsUSA chapter meetings.
- c) Attend a high school SkillsUSA event.

ACADEMIC STANDARDS:

ELA7R2: The student understands and acquires new vocabulary and uses it correctly in reading and writing.

ELA7RC2: The student participates in discussions related to curricular learning in all subject areas.

SAMPLE TASKS:

- Invite a high school officer to talk to chapter.
- Establish the different officers needed in the local chapter.
- Run for an office in the local chapter.
- Attend a high school SkillsUSA chapter meeting.
- Attend a regional SkillsUSA competition.
- Attend a state level SkillsUSA competition.
- Attend the SkillsUSA Career Expo.

READING STANDARD COMMENT

After the elementary years, students are seriously engaged in reading for learning. This process sweeps across all disciplinary domains, extending even to the area of personal learning. Students encounter a variety of informational as well as fictional texts, and they experience text in all genres and modes of discourse. In the study of various disciplines of learning (language arts, mathematics, science, social studies), students must learn through reading the communities of discourse of each of those disciplines. Each subject has its own specific vocabulary, and for students to excel in all subjects, they must learn the specific vocabulary of those subject areas *in context*.

Beginning with the middle grade years, students begin to self-select reading materials based on personal interests established through classroom learning. Students become curious about science, mathematics, history, and literature as they form contexts for those subjects related to their personal and classroom experiences. As students explore academic areas through reading, they develop favorite subjects and become confident in their verbal discourse about those subjects.

Reading across curriculum content develops both academic and personal interests in students. As students read, they develop both content and contextual vocabulary. They also build good habits for reading, researching, and learning. The Reading Across the Curriculum standard focuses on the academic and personal skills students acquire as they read in all areas of learning.

MRC. Students will enhance reading in all curriculum areas by:

- a. Reading in all curriculum areas.
 - Read a minimum of 25 grade-level appropriate books per year from a variety of subject disciplines and participate in discussions related to curricular learning in all areas.
 - Read both informational and fictional texts in a variety of genres and modes of discourse.
 - Read technical texts related to various subject areas.
- b. Discussing books.
 - Discuss messages and themes from books in all subject areas.
 - Respond to a variety of texts in multiple modes of discourse.
 - Relate messages and themes from one subject area to messages and themes in another area.
 - Evaluate the merit of texts in every subject discipline.
 - Examine author's purpose in writing.
 - Recognize the features of disciplinary texts.
- c. Building vocabulary knowledge.
 - Demonstrate an understanding of contextual vocabulary in various subjects.
 - Use content vocabulary in writing and speaking.
 - Explore understanding of new words found in subject area texts.
- d. Establishing context.
 - Explore life experiences related to subject area content.
 - Discuss in both writing and speaking how certain words are subject area related.
 - Determine strategies for finding content and contextual meaning for unknown words.

WRITING

The student writes clear, coherent text. The writing shows consideration of the audience and purpose. The student progresses through the stages of the writing process (e.g., prewriting, drafting, revising, and editing successive versions).

CTAEW1: The student demonstrates competence in a variety of genres.

The student produces technical writing (business correspondence: memoranda, emails, letters of inquiry, letters of complaint, instructions and procedures, lab reports, slide presentations) that:

- a. Creates or follows an organizing structure appropriate to purpose, audience, and context.
- b. Excludes extraneous and inappropriate information.
- c. Follows an organizational pattern appropriate to the type of composition.
- d. Applies rules of Standard English.

CTAEW2: The student uses research and technology to support writing. The student:

- a. Identifies topics, asks and evaluates questions, and develops ideas leading to inquiry, investigation, and research.
- b. Uses organizational features of electronic text (e.g., bulletin boards, databases, keyword searches, e-mail addresses) to locate relevant information.

- c. Includes researched information in different types of products (e.g., compositions, multimedia presentations, graphic organizers, projects, etc.).
- d. Uses appropriate structures to ensure coherence (e.g., transition elements).
- e. Supports statements and claims with anecdotes, descriptions, facts and statistics, and specific examples.
- f. Gives credit for both quoted and paraphrased information in a bibliography by using a consistent and sanctioned format and methodology for citations.

CTAEW3: The student consistently uses the writing process to develop, revise, and evaluate writing. The student:

- a. Plans and drafts independently and resourcefully.
- b. Uses strategies of note taking, outlining, and summarizing to impose structure on composition drafts.
- c. Edits writing to improve word choice after checking the precision of the vocabulary.

ENTREPRENEURSHIP

MKT-EN-1: Understands concepts and processes associated with successful entrepreneurial performance.

- a. Define entrepreneurship.
- b. Identify and analyze characteristics of a successful entrepreneur.
- c. Identify the reasons for planning in entrepreneurial businesses.
- d. Discuss the entrepreneurial discovery processes.
- e. Assess global trends and opportunities.
- f. Determine opportunities for business creation.
- g. Generate ideas for business.
- h. Determine feasibility of ideas.
- i. Determine the major reasons for business failure.

ACADEMIC STANDARDS

ELA8W1: The student produces writing that establishes an appropriate organizational structure, sets a context and engages the reader, maintains a coherent focus throughout, and signals a satisfying closure.

ELA8W3: The student uses research and technology to support writing.

SSEF6: The student will explain how productivity, economic growth and future standards of living are influenced by investment in factories, machinery, new technology and the health, education and training of people.

SSEIN1: The student will explain why individuals, businesses and governments trade goods and services.

MKT-EN-2: Explain the fundamental concepts of business ownership.

- a. Determine the relationship of competition to our private, free enterprise system.
- b. Explain the effects of competition on buyers and sellers.
- c. Identify the common types of business ownership.

- d. Compare and contrast the advantages and disadvantages of each type of ownership.
- e. Explain relevant government regulations relating to the operation of a business.
- f. Discuss the types of risks that businesses encounter.
- g. Explain how businesses deal with the various types of risks.
- h. Identify the market segment for the business.
- i. Formulate a marketing mix designed to reach a specific market segment.
- j. Utilize the marketing functions to determine the competitive advantage of the proposed business.

ACADEMIC STANDARDS

- ELA8W1: The student produces writing that establishes an appropriate organizational structure, sets a context and engages the reader, maintains a coherent focus throughout, and signals a satisfying closure.*
- ELA8W3: The student uses research and technology to support writing.*
- SSEF5: The student will describe the roles of government in a market economy.*

CTAE FOUNDATION SKILLS

The Foundation Skills for Career, Technical and Agricultural Education (CTAE) are critical competencies that students pursuing any career pathway should exhibit to be successful. As core standards for all career pathways in all program concentrations, these skills link career, technical and agricultural education to the state's academic performance standards.

The CTAE Foundation Skills are aligned to the foundation of the U.S. Department of Education's 16 Career Clusters. Endorsed by the National Career Technical Education Foundation (NCTEF) and the National Association of State Directors of Career Technical Education Consortium (NASDCTEc), the foundation skills were developed from an analysis of all pathways in the sixteen occupational areas. These standards were identified and validated by a national advisory group of employers, secondary and postsecondary educators, labor associations, and other stakeholders. The Knowledge and Skills provide learners a broad foundation for managing lifelong learning and career transitions in a rapidly changing economy.

CTAE-FS-1 Technical Skills: Learners achieve technical content skills necessary to pursue the full range of careers for all pathways in the program concentration.

CTAE-FS-2 Academic Foundations: Learners achieve state academic standards at or above grade level.

CTAE-FS-3 Communications: Learners use various communication skills in expressing and interpreting information.

CTAE-FS-4 Problem Solving and Critical Thinking: Learners define and solve problems, and use problem-solving and improvement methods and tools.

CTAE-FS-5 Information Technology Applications: Learners use multiple information technology devices to access, organize, process, transmit, and communicate information.

CTAE-FS-6 Systems: Learners understand a variety of organizational structures and functions.

CTAE-FS-7 Safety, Health and Environment: Learners employ safety, health and environmental management systems in corporations and comprehend their importance to organizational performance and regulatory compliance.

CTAE-FS-8 Leadership and Teamwork: Learners apply leadership and teamwork skills in collaborating with others to accomplish organizational goals and objectives.

CTAE-FS-9 Ethics and Legal Responsibilities: Learners commit to work ethics, behavior, and legal responsibilities in the workplace.

CTAE-FS-10 Career Development: Learners plan and manage academic-career plans and employment relations.

CTAE-FS-11 Entrepreneurship: Learners demonstrate understanding of concepts, processes, and behaviors associated with successful entrepreneurial performance.