**Architecture and Construction Foundations Course Syllabus**

Course Number: 17002G1002

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**Course Description**

Architecture and Construction Foundations is the foundational course for the Architecture and Construction career cluster. It is the first step in any of the three pathways (Construction, Design and Preconstruction, or Maintenance and Operations). Topics include construction mathematics; hand and power tools; construction drawings, specifications, and layout; communication; and material handling.

**Goals**

Students learn and apply safety concepts, explore career opportunities and requirements, practice the skills needed to succeed in the workplace, develop leadership qualities and take advantage of the opportunities afforded by Career and Technical Student Organizations (CTSOs), and learn and practice essential digital literacy skills.

**Pre-requisites**: None

**Fees:** There is a required fee of $40 per year ($20 per semester)

***Foundational Standards***

1. Identify safety procedures in handling, operating, and maintaining tools and machinery; handling materials; utilizing personal protective equipment; maintaining a safe work area; and handling hazardous materials and forces.

2. Demonstrate effective workplace and employability skills, including communication, awareness of diversity, positive work ethic, problem-solving, time management, and teamwork.

3. Explore the range of careers available in the field and investigate their educational requirements, and demonstrate job-seeking skills including resume-writing and interviewing

4. Advocate and practice safe, legal, responsible, and ethical use of information and technology tools specific to the industry pathway.

5. Participate in a Career and Technical Student Organization (CTSO) to increase knowledge and skills and to enhance leadership and teamwork.

***Content Standards***

1. Prepare a material takeoff and cost estimate for a given project, converting between decimals and percentages as needed.

Examples: Calculate how many pieces of lumber are required for a construction project, building in a 10% error margin to ensure that sufficient materials are on site when needed. Calculate sales tax.

2. Convert a standard material takeoff to the metric system in accordance with General Services Administration (GSA) regulations for federal renovation and construction projects.

3. Calculate floor and wall areas for a material takeoff, using area formulas, and the amount of concrete for a slab or footing, using volume formulas.

Examples: carpet, laminated flooring; driveway

4. Describe specialized tools used for measuring and show how they are used to determine dimensions for a given project.

Examples: speed square, tape measure, framing square, engineering scale, laser measuring system, calipers

5. Demonstrate the safe use and maintenance of various types of hand and power tools including levels, squares, clamps, hand saws, circular/table/miter saws, routers, drills, and pneumatic staple and nail guns.

6. Describe the types of drawings usually included in a set of plans and the information found on each type. Examples: civil, architectural, structural

a. Use architect’s and engineering scales to perform a quantity takeoff for a given set of construction drawings.

b. Correlate information from different drawings in a set of plans.

7. Describe the different types of lines used on construction drawings and explain what they represent. Examples: property, object, hidden, and break lines

8. Identify architectural symbols commonly used to represent features and materials on plans.

Examples: doors, windows, plumbing fixtures, electrical components

9. Explain the organization and purpose of written specifications.

10. Create basic drawings and compile specifications for an architecture and construction project, using computers, software, and/or other information technology.

11. Communicate effectively orally and in writing with various stakeholders as simulated or actual construction projects are carried out.

12. Describe the basic concepts of material handling and common safety precautions.

13. Identify various types of material handling equipment and describe how each type is used.

**Embedded Numeracy Anchor Assignment**

This course presents informational methods of contextual mathematical instruction directly related to Welding. Students will review pre-existing concepts and learn new concepts that are specific to the welding industry. Relative mathematics will prepare students for higher education or provide them with the knowledge necessary to enter directly into the trade. Students will complete various assignments but not limited to projects and problem solving activities. Additionally, students will practice Accuplacer- prep objectives.

**Embedded Literacy Anchor Assignment**

The ECRC welding program will capitalize on student interest in welding technology and practical experience in the welding shop. Students will be encouraged to choose topics related to welding technology and the workplace when conducting research and presenting information.

**Embedded Science Anchor Assignment**

The metallurgy of the weld, as well as the area around it, is directly related to the composition of the base metal (the metal you started with), the weld metal (the admixture of melted base metal and deposited filler metal, if used), heat input, the size of the HAZ, and the process and procedures used.

**Classroom Expectations**

1. Be respectful of the teacher, each other, and all classroom property
2. Participate in classroom discussion and group work
3. Use appropriate language at all times
4. Be in class on time and seated
5. No Phone usage

**Daily Class Work**

Students will review previous class work and get more in depth to the information technology cluster.

**Assessment Procedures:** Final grades will be comprised of daily activities, quizzes, and tests

Major (50%): Units tests and welding examples

Minor (40%): Daily activities and quizzes

9th Weeks Exam (10%)

**Grading Policy**

A (90-100), B (80-89), C (70-79), D (60-69), and F (below 60).

# Student Credentialing

For the welding program, industry-recognized credentials of value and certifications have been established that validate the rigor of the curriculum to students, parents, and members of business and industry. In addition, articulation agreements are developed in partnership with the Alabama Community College System to allow for a seamless transition for students to further their education. Students must pass the AWS plate test and vertical plate test three times that will be viewed by an outside party before we send to Wesco for certification. Credential options may change any time under guidance from the state department of education and testing eligibility will update accordingly.

**CTSO**: Career and Technical Student Organizations are integral, co-curricular components of each career and technical education course. These organizations enhance classroom instruction while helping students develop leadership abilities, expand workplace-readiness skills, and access opportunities for personal and professional growth. Students in the Architecture and Construction career cluster affiliate with SkillsUSA.

Print Student Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Student Signature\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Parent or Guardian Signature\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Date\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

*\* The syllabus serves as a guide for both the teacher and student; however, during the term it may become necessary to make additions, deletions, or substitutions. For any necessary changes, adequate notice will be provided to the students.*