

Course Title:	YouthBuild Integrated Construction Curriculum
Grade Level(s):	12
Length of Course:	One semester or equivalent term
Credit:	5 units
Prerequisite:	Completion of Junior year and/or 180 units (or consent of the instructor or YouthBuild Program Manager.)
Co-requisite:	None

Course Overview:

The YouthBuild Integrated Construction Curriculum, Working Hands, Working Minds, is designed to help YouthBuild instructors and trainers integrate academics, construction, and leadership development. It fosters reading, writing, and mathematics learning through the context of construction; skill training is directly linked to community responsibility and social analysis. This curriculum motivates students by engaging them in real-world problems and projects. Using the teacher as their guide, students investigate authentic community problems.

Schools Offering:	Livermore High School Granada High School Del Valle High School Vineyard High School YouthBuild Program
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Meets University of California Entrance Requirements:	No
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Board Approval:	<i>Pending Board Approval</i>
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Course Materials:	<u>Working Hands, Working Minds</u> , by Anne Meisenzahl and David Greene, Published by YouthBuild USA, © 2001. Published online: https://youthbuild.workforcegps.org/resources/2019/05/10/18/13/Working_Hands_-_Working_Minds_Curriculum
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Supplemental Materials:	Online resources, printed consumables, and instructor-created materials.
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YouthBuild Integrated Construction Curriculum

COURSE CONTENT:

Unit 1: Teamwork and Leadership in Construction

Objective: In this unit, students will learn to:

- define teamwork and leadership and examine the variety of experiences they each bring to YouthBuild and create an inventory of the team's skills.
- develop a statement that expresses their philosophy about teamwork and leadership at YouthBuild.
- explore how to get along with a diverse group of people and bridge differences at YouthBuild.
- learn how diverse populations can be encouraged to enter and stay in the Construction Trades.
- practice several of the core communication skills needed for effective teamwork.
- process and identify a communication skill they will try to improve.
- evaluate the process of working together and write reflectively about it.
- explore the negative stereotypes that abound in society about youth and young adults as leaders.
- collect material they have produced throughout the unit into individual portfolios. They write reflectively and then create a final product to present

Unit 2: Construction, Health and Safety

Objective: In this unit, students will learn to:

- distinguish between attitudes and behavior that cause accidents and those that promote safety.
- examine the relationship between their own physical and mental health and safety in the work environment.
- develop safety rules based on scenarios and compare them to the worksite rules.
- learn typical safety rules and warnings in tool operating instructions.
- identify and properly use safety gear, and look for hazards.
- learn to lift a variety of items properly and learn exercises to strengthen the back, as well as the twelve basic steps for responding to emergencies and role play how to respond in emergency situations, including making emergency calls.
- explore the issues of violence and sexual harassment in the workplace through frank and open discussion and small-group activities.
- research workers' health and safety organizations and write letters of inquiry.
- create a portfolio assessment includes student self-assessment, student reflection on collected work and learning, instructor assessments, and instructor observation.

Unit 3: Tools, Trades, and Technology in Construction

Objective: In this unit, students will learn to:

- examine the concept of tools and imagine how tools were first developed, and how tools have changed throughout history.
- explore how humans have created tools to exercise control over nature and discuss how culture affects the way we treat our environment.
- demonstrate an understanding of the basic safety rules for rough carpentry.
- learn to identify and correctly use basic carpentry framing tools.

- interview vocational instructors at local community or technical colleges about the role of advanced technology in the trades.
- conduct investigations of workplaces and the changes taking place in tools and technology. They explore the skills needed to adjust to new tools and technologies.
- discuss the importance of adapting to coming periods of technological change. They will do job market research to find examples of technological change.
- create a portfolio: students will collect and present material they have produced throughout the unit.

Unit 4: Construction-Related Math and Measurement

Objective: In this unit, students will learn to:

- discuss the practical applications of math in daily life.
- demonstrate their current measurement skills using a skills assessment.
- explore the concept of “standard unit” by practicing measuring with and without standard units. Become familiar with standard units of conversion.
- review and practice measuring with a ruler in order to improve accuracy in construction projects.
- practice identifying fractional parts on a ruler and applying fractions operations
- develop a formula for finding perimeter based on actual measurement of a room, and finding the area using a formula.
- investigate the use of percentages and right angles in construction.
- explore angles, triangles, and the Pythagorean theorem in construction.
- design an entertainment center as a way to practice measurement and to understand how fractions and percentages apply to design layouts.
- create a portfolio that includes material, self-assessment, and skill assessments.

Unit 5: Housing and Community

Objective: In this unit, students will learn to:

- reflect on the physical and emotional characteristics of a home as a physical place and an emotional center.
- interview a representative of the agency that coordinates housing development for the YouthBuild program in order to learn about its role in housing development.
- explore their values and assumptions around issues of housing and poverty and brainstorm tactics for self-advocacy with social issues, particularly housing issues.
- design a community that meets human needs they have identified.
- explore the importance of community history and research/record the history of their community through oral history interviews.
- compile historical data and share oral histories through group presentations.
- investigate statistics on the state of the Nation’s housing in order to identify significant housing problems and the causes of these problems.
- identify the key causes of homelessness and solutions to the problem.
- survey the local community about local housing needs to determine key areas of concern that they will use as subjects of research.
- research housing problems in order to better understand how these problems evolved and to find innovative solutions at the local and national level.
- explore the motives and strategies of a person who has worked to change housing patterns.
- create portfolios that reflect on their progress over the course of the unit, and plan a project intended to influence a particular housing issue.

Summary of Key Assignments and/or Activities

At the end of each unit, students will produce a portfolio assessment of their work which includes: student self-assessment, student reflection on collected work and learning, instructor assessments, and instructor observation. This Project-Based learning curriculum will provide opportunities for regular assessment of student work through a range of methods, including exhibitions and portfolios. These key assignments will push each participant to critically consider information and provide rigor through the challenge of organizing and presenting their findings to others.

Foundation Standards

Career Technical Education Standards:

Building and Construction Trades Knowledge and Performance Anchor Standards

1.0 Academics

Analyze and apply appropriate academic standards required for successful industry sector pathway completion leading to postsecondary education and employment.

CCSS Reading Informational Text

- (RI.9-10.1) Cite strong and thorough textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text.
- (RI.9-10.2) Determine a central idea of a text and analyze its development over the course of the text, including how it emerges and is shaped and refined by specific details; provide an objective summary of the text.
- (RI.9-10.4) Determine the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings; analyze the cumulative impact of specific word choices on meaning and tone (e.g., how the language of a court opinion differs from that of a newspaper).
- (RI.9-10.7) Analyze various accounts of a subject told in different mediums (e.g., a person's life story in both print and multimedia), determining which details are emphasized in each account.
- (RI.9-10.8) Delineate and evaluate the argument and specific claims in a text, assessing whether the reasoning is valid and the evidence is relevant and sufficient; identify false statements and fallacious reasoning.

CCSS Writing

- (WHST.9-10.2.A) Introduce a topic and organize ideas, concepts, and information to make important connections and distinctions; include formatting (e.g., headings), graphics (e.g., figures, tables), and multimedia when useful to aiding comprehension.
- (WHST.9-10.2.B) Develop the topic with well-chosen, relevant, and sufficient facts, extended definitions, concrete details, quotations, or other information and examples appropriate to the audience's knowledge of the topic.
- (W.9-10.2.F) Provide a concluding statement or section that follows from and supports the information or explanation presented (e.g., articulating implications or the significance of the topic).

(WHST.9-10.7) Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.

CCSS Mathematics

(.HSG.CO.A.1) Know precise definitions of angle, circle, perpendicular line, parallel line, and line segment, based on the undefined notions of point, line, distance along a line, and distance around a circular arc.

(7.G.B.4) Know the formulas for the area and circumference of a circle and use them to solve problems; give an informal derivation of the relationship between the circumference and area of a circle.

(.7.G.B.6) Solve real-world and mathematical problems involving area, volume and surface area of two- and three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes, and right prisms.

(6.G.A.1) Find the area of right triangles, other triangles, special quadrilaterals, and polygons by composing into rectangles or decomposing into triangles and other shapes; apply these techniques in the context of solving real-world and mathematical problems.

2.0 Communications

Acquire and accurately use Building and Construction Trades sector terminology and protocols at the career and college readiness level for communicating effectively in oral, written, and multimedia formats.

2.3 Interpret verbal and nonverbal communications and respond appropriately.

2.4 Demonstrate elements of written and electronic communication such as accurate spelling, grammar, and format.

2.5 Communicate information and ideas effectively to multiple audiences using a variety of media and formats.

3.0 Career Planning and Management

Integrate multiple sources of career information from diverse formats to make informed career decisions, solve problems, and manage personal career plans.

3.1 Identify personal interests, aptitudes, information, and skills necessary for informed career decision making.

3.2 Evaluate personal character traits such as trust, respect, and responsibility and understand the impact they can have on career success.

3.4 Research the scope of career opportunities available and the requirements for education, training, certification, and licensure.

3.5 Integrate changing employment trends, societal needs, and economic conditions into career planning.

3.6 Recognize the role and function of professional organizations, industry associations, and organized labor in a productive society

3.9 Develop a career plan that reflects career interests, pathways, and postsecondary options

4.0 Technology

Use existing and emerging technology to investigate, research, and produce products and services, including new information, as required in the Building and Construction Trades sector workplace environment.

- 4.1 Use electronic reference materials to gather information and produce products and services.
- 4.2 Employ Web-based communications responsibly and effectively to explore complex systems and issues.
- 4.3 Use information and communication technologies to synthesize, summarize, compare, and contrast information from multiple sources.

5.0 Problem Solving and Critical Thinking

Conduct short, as well as more sustained, research to create alternative solutions to answer a question or solve a problem unique to the Building and Construction Trades sector using critical and creative thinking, logical reasoning, analysis, inquiry, and problem-solving techniques.

- 5.1 Identify and ask significant questions that clarify various points of view to solve problems.
- 5.2 Solve predictable and unpredictable work-related problems using various types of reasoning (inductive, deductive) as appropriate.
- 5.3 Use systems thinking to analyze how various components interact with each other to produce outcomes in a complex work environment.
- 5.4 Interpret information and draw conclusions, based on the best analysis, to make informed decisions.

6.0 Health and Safety

Demonstrate health and safety procedures, regulations, and personal health practices and determine the meaning of symbols, key terms, and domain-specific words and phrases as related to the Building and Construction Trades sector workplace environment.

- 6.1 Interpret policies, procedures, and regulations for the workplace environment, including employer and employee responsibilities.
- 6.3 Set up a work area, or shop, to avoid potential health concerns and safety hazards, including but not limited to electrical (shock), wires (tripping), fumes (lung health), noise (hearing loss), fire (burns), and so forth, incorporating ergonomics.
- 6.4 Practice personal safety when lifting, bending, or moving equipment and supplies.
- 6.5 Demonstrate how to prevent and respond to work-related accidents or injuries; this includes demonstrating an understanding of ergonomics.
- 6.6 Maintain a safe and healthful working environment.
- 6.7 Be informed of laws/acts pertaining to the Occupational Safety and Health Administration (OSHA).
- 6.8 Report hazards found on the job site to supervisor/teacher.
- 6.10 Maintain proper use of safety apparel at all times, including but not limited to, eye protection, hearing protection, skin protection, head protection, footwear and protection from airborne particulate matter.
- 6.12 Demonstrate the proper care and safe use of hand, portable and stationary power tools.

7.0 Responsibility and Flexibility

Initiate, and participate in, a range of collaborations demonstrating behaviors that reflect personal and professional responsibility, flexibility, and respect in the Building and Construction Trades sector workplace environment and community settings

- 7.1 Recognize how financial management impacts the economy, workforce, and community.
- 7.2 Explain the importance of accountability and responsibility in fulfilling personal, community, and workplace roles.
- 7.3 Understand the need to adapt to changing and varied roles and responsibilities.
- 7.4 Practice time management and efficiency to fulfill responsibilities.
- 7.6 Demonstrate knowledge and practice of responsible financial management.
- 7.7 Demonstrate the qualities and behaviors that constitute a positive and professional work demeanor, including appropriate attire for the profession.

8.0 Ethics and Legal Responsibilities

Practice professional, ethical, and legal behavior, responding thoughtfully to diverse perspectives and resolving contradictions when possible, consistent with applicable laws, regulations, and organizational norms.

- 8.1 Access, analyze, and implement quality assurance standards of practice.
- 8.3 Demonstrate ethical and legal practices consistent with Building and Construction Trades sector workplace standards.
- 8.4 Explain the importance of personal integrity, confidentiality, and ethical behavior in the workplace.
- 8.5 Analyze organizational culture and practices within the workplace environment.

9.0 Leadership and Teamwork

Work with peers to promote divergent and creative perspectives, effective leadership, group dynamics, team and individual decision making, benefits of workforce diversity, and conflict resolution as practiced in the SkillsUSA career technical student organization.

- 9.1 Define leadership and identify the responsibilities, competencies, and behaviors of successful leaders.
- 9.2 Identify the characteristics of successful teams, including leadership, cooperation, collaboration, and effective decision-making skills as applied in groups, teams, and career technical student organization activities.
- 9.3 Understand the characteristics and benefits of teamwork, leadership, and citizenship in the school, community, and workplace setting.
- 9.4 Explain how professional associations and organizations and associated leadership development and competitive career development activities enhance academic preparation, promote career choices, and contribute to employment opportunities.
- 9.6 Respect individual and cultural differences and recognize the importance of diversity in the workplace.
- 9.7 Participate in interactive teamwork to solve real Building and Construction Trades sector issues and problems.

10.0 Technical Knowledge and Skills

Apply essential technical knowledge and skills common to all pathways in the Building and Construction Trades sector, following procedures when carrying out experiments or performing technical tasks.

- 10.1 Interpret and explain terminology and practices specific to the Building and Construction Trades sector.
- 10.2 Comply with the rules, regulations, and expectations of all aspects of the Building and Construction Trades sector.
- 10.3 Construct projects and products specific to the Building and Construction Trades sector requirements and expectations.
- 10.4 Collaborate with industry experts for specific technical knowledge and skills.
- 10.5 Demonstrate the basic care, proper maintenance, and use of hand, portable, and stationary tools related to the Building and Construction trades.

11.0 Demonstration and Application

Demonstrate and apply the knowledge and skills contained in the Building and Construction Trades anchor standards, pathway standards, and performance indicators in classroom, laboratory, and workplace settings, and through the SkillsUSA career technical student organizations

- 11.1 Utilize work-based/workplace learning experiences to demonstrate and expand upon knowledge and skills gained during classroom instruction and laboratory practices specific to the Building and Construction Trades sector program of study.
- 11.2 Demonstrate proficiency in a career technical pathway that leads to certification, licensure, and/or continued learning at the postsecondary level.
- 11.5 Create a portfolio, or similar collection of work, that offers evidence through assessment and evaluation of skills and knowledge competency as contained in the anchor standards, pathway standards, and performance indicators.

Building and Construction Trades Pathway Standards

D. Residential and Commercial Construction Pathway

The Residential and Commercial Construction pathway provides learning opportunities for students interested in preparing for careers in construction and building design, performance, and sustainability. The standards focus on the manner in which residential and commercial structures are designed and built. The pathway includes instruction in the way in which these structures are built (Class B California License).

- D1.0 Recognize the impact of financial, technical, environmental, and labor trends on the past and future of the construction industry.
 - D1.1 Understand significant historical trends in the construction industry.
 - D1.2 Understand the environmental regulations that influence residential and commercial design.
- D2.0 Apply the appropriate mathematical calculations used in the construction trades.
 - D2.1 Apply formulas to determine area, volume, lineal, board, and square feet.
 - D2.2 Apply the Pythagorean Theorem to calculate pipe offsets, roof slope, and check for square.
 - D2.3 Estimate the materials needed to complete a specific task.

D3.0 Interpret and apply information from technical drawings, schedules, and specifications used in the construction trades.

D3.1 Identify the elements used in technical drawings, including types of lines, symbols, details, and views.

D3.2 Identify and interpret the elements of technical drawings, including plan, elevation, section, and detail views.

D3.3 Interpret technical drawings specifications.

D3.4 Identify plumbing, electrical, and mechanical symbols and other abbreviations used in construction drawings.

D3.5 Interpret and scale dimensions from a set of plans using an architect's scale.

D3.7 Understand the sequencing and phases of residential and commercial construction projects.

D6.0 Demonstrate carpentry techniques for the construction of a single-family residence.

D6.1 Properly place a moisture barrier and pest control guard on a foundation.

D6.2 Attach a sill plate at top of concrete foundation.

D6.3 Lay out, cut, and install joist supports, rim joists, and floor joists as specified on construction plans.

D6.5 Demonstrate wall and plate layout, including rough openings.

D6.6 Measure, cut, and assemble wall components using appropriate tools and fasteners.

D6.7 Demonstrate the ability to square wall systems and install wall bracing and shear panels according to code.

D6.8 Stand, square, plumb, and brace walls.

D9.0 Understand, integrate, and employ sustainable construction practices in the building trades.

D9.1 Identify design and energy solutions for improving building energy efficiency.

D9.2 Identify materials used in building construction to increase energy efficiency and sustainability.

D9.3 Calculate energy requirements and loads for buildings and structures.

D9.4 Demonstrate the application of constructing materials intended to improve building efficiency and sustainability.

Instructional Methods and/or Strategies

- Direct instruction through lectures
- Group and class discussion
- Cooperative learning
- Hands-on experience and practice
- Project-based learning
- Online and video instruction

Assessment Methods and/or Tools

- End-of-Unit portfolios
- Skill assessments
- Research projects
- Class assignments, reflections, and interviews

- Self and peer evaluation