

Building Trades

Career Cluster	Architecture and Construction
Course Code	17002
Prerequisite(s)	Introduction to Architecture and Construction
Credit	.5
Program of Study and Sequence	Foundation Courses, Introduction to Architecture and Construction, Building Trades, Residential Construction, Capstone
Student Organization	SkillsUSA
Coordinating Work-Based Learning	This standard includes Workplace Tours, Service learning and Apprenticeship
Industry Certifications	None
Dual Credit or Dual Enrollment	TBD
Teacher Certification	Architecture & Construction Cluster Endorsement; Construction Pathway Endorsement; Building Trades Endorsement; 7-12 Technology Education Endorsement
Resources	

Course Description:

Students will gain insight into the career of building trades by developing practical skills such as safety on the jobsite, construction math, use of hand/power/pneumatic tools, basic residential blueprint reading, basic land surveying techniques, building construction, plumbing, electrical, concrete, employability skills and career exploration required to succeed in the construction industry.

Program of Study Application

This is the third course in the suggested sequence of the Residential Construction Program of Study. It is recommended that it is preceded by (1) Foundation Courses, (2) Introduction to Architecture and Construction, and followed by (4) Residential Construction and (5) Capstone Experience.

Indicator # BT 1 Understand and Apply Industry Safety Procedures

<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Level 2 Skill/ Concept	BT1.1 Identify and demonstrate the proper industry safety standards. Examples: <ul style="list-style-type: none"> • Examine basic construction safety using Occupational Safety Health Administration (OSHA) standards or equivalents. • Demonstrate the use of protective clothing and safety equipment • Inspect and care for various types of personal protective equipment • Demonstrate basic first aid • Explain the function of Material Safety Data Sheets (MSDS) • Practice safe work procedures around electrical hazards • Explain and practice safe lockout/tag out procedures • Maintain a written portfolio record of written safety examinations and equipment examinations which the student has passed 	OSHA Certification (Optional) for dual credit. Transfer portfolio records in their MyLife portfolio NCCER Core Basic Safety module 00101-09

Notes:

Indicator # BT 2 Utilize appropriate industry math skills and formulas

<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Level 2 Skill/ Concept	BT2.1 Understand and demonstrate basic math skills and formulas. Examples: <ul style="list-style-type: none"> • Correctly read a tape measure to the nearest 1/16" • Add, subtract, multiply, and divide whole numbers with and without a calculator • Add, subtract, multiply, and divide fractions • Add, subtract, multiply, and divide decimals, with and without a calculator • Convert decimals to percent and percent to decimals • Convert fractions to decimals and decimals to fractions • Calculate the necessary unit of measure for a building project (examples: square inches/square feet, cubic inches/cubic feet) 	Develop an awareness of personal abilities, skills, interests and motivations. NCCER Core Introduction to Construction Math module 00102-09

Notes:

Indicator # BT 3 Identify and correctly use appropriate hand, power, and pneumatic tools

<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Level 2 Skill/ Concept	<p>BT3.1 Demonstrate safe and proper use of hand tools.</p> <p>Examples:</p> <ul style="list-style-type: none"> Identify and report on the hand tools used in the construction trades Demonstrate safe use of basic hand tools Explain and demonstrate basic maintenance procedures for hand tools 	<p>Suggested Activities: Have a tool rep. visit the class</p> <p>NCCER Core Introduction to Hand Tools module 00103-09</p>
Level 2 Skill/ Concept	<p>BT3.2 Demonstrate safe and proper use of power tools.</p> <p>Examples:</p> <ul style="list-style-type: none"> Identify and report on the power tools used in the construction trades Demonstrate safe use of power tools Explain and demonstrate the procedures to properly maintain these power tools 	<p>Suggested Activities: Have a tool rep. visit the class</p> <p>NCCER Core Introduction to Power Tools module 00104-09</p>
Level 2 Skill /Concept	<p>BT3.3 Demonstrate safe and proper use of pneumatic tools.</p> <p>Examples:</p> <ul style="list-style-type: none"> Identify and report on the pneumatic tools used in the construction trades Demonstrate safe use of pneumatic tools Explain and demonstrate the procedures to properly maintain these pneumatic tools 	<p>Suggested Activities: Have a tool rep. visit the class</p> <p>NCCER Core Introduction to Power Tools module 00104-09</p>

Notes:

Indicator # BT 4 Understand blueprint reading and perform basic survey techniques

<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Level 3 Strategic Thinking	BT4.1 Demonstrate how to read blueprints. Examples: <ul style="list-style-type: none"> • Identify and recognize basic blueprint terms and symbols • Relate information on prints to real parts and locations 	NCCER Core Introduction to Construction Drawings module 00105-09
Level 3 Strategic Thinking	BT4.2 Demonstrate basic survey techniques. Examples: <ul style="list-style-type: none"> • Define plot plan, building lines, care of instruments, layout and running lines • Demonstrate surveying a project 	Acquire employability skills such as working on a team, problem-solving and organizational skills NCCER Core Basic Communication Skills module 00107-09 NCCER Core Basic Employability Skills module 00108-09

Notes:

Indicator # BT 5 Apply basic organizational, spatial, structural and construction principles of carpentry

<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Level 3 Strategic Thinking	<p>BT 5.1 Demonstrate the understanding of the building process by the building of a construction project.</p> <p>Examples:</p> <ul style="list-style-type: none"> • Complete a construction of a utility shed from reading and understanding the blueprint to finishing the roof system and painting the project. • Build a small scale model home • Construct a community service project (Example: wheel chair ramp) 	<p>Acquire employability skills such as working on a team, problem-solving and organizational skills</p> <p>NCCER Core Basic Communication Skills module 00107-09</p> <p>NCCER Core Basic Employability Skills module 00108-09</p>

Notes:

Indicator # BT 6 Study principles, standards and applications of plumbing

<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
<p>Level 1 Recall</p>	<p>BT6.1 Define safety procedures for plumbing Examples:</p> <ul style="list-style-type: none"> • Explain the classes of fires and the type(s) of extinguishers used for each • Show proper procedures for soldering which is common in the plumbing industry 	<p>Invite a career professional to visit and explain the use of plans for a structure</p> <p>The student will learn how to interact and work cooperatively as a team member on a survey crew</p> <p>NCCER Introduction to the Plumbing Profession Plumbing Safety module 02102-12</p>
<p>Level 2 Skill/ Concept</p>	<p>BT6.2 Distinguish pipe sizes, fittings, adapters, and coupling. Examples:</p> <ul style="list-style-type: none"> • Explain uses of different plumbing materials • Interpret code for different plumbing situations 	<p>Learn to make decisions</p> <p>NCCER Introduction to the Plumbing Profession Plastic Pipe and Fittings module 02106-12</p> <p>NCCER Introduction to the Plumbing Profession Copper Tube and Fittings module 02107-12</p>

<p>Level 3 Strategic Thinking</p>	<p>BT6.3 Demonstrate the use of plumbing materials. Examples:</p> <ul style="list-style-type: none">• Select methods to properly thread pipe• Make use of plumbing materials to build a bathroom mock-up• Illustrate procedures of proper soldering and pipe fitting	<p>Invite a career professional to visit and explain pipe fittings and plumbing layout</p> <p>The student will learn how to interact and work cooperatively as a team member</p>
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Indicator # BT 7 Employ basic knowledge and methods of electrical wiring

<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Level 1 Recall	BT7.1 Select electrical materials considering safety. Examples: <ul style="list-style-type: none"> • Identify basic codes of electrical wiring • Interpret proper and improper electrical connections 	Learn to make decisions NCCER Orientation to the Electrical Trade Electrical Safety module 26102-14 NCCER Orientation to Electrical Trade Introduction to the National Electrical Code module 26105-14
Level 2 Skill/ Concept	BT7.2 Identify electrical materials. Examples: <ul style="list-style-type: none"> • Distinguish wire size, capacities, and characteristics • Classify conductors and other electrical materials 	Learn to make decisions NCCER Orientation to the Electrical Trade Introduction to Electrical Circuits module 26103-14 NCCER Orientation to the Electrical Trade Electrical Theory Module 26104-14

<p>Level 3 Strategic Thinking</p>	<p>BT7.3 Illustrate uses of electrical materials. Examples:</p> <ul style="list-style-type: none"> • Manipulate switches, outlets and light fixtures • Complete construction of electrical project(s) 	<p>Invite a career professional to visit and explain the electrical trades</p> <p>The student will learn how to interact and work cooperatively as a team member on an electrical installation project</p> <p>NCCER Orientation to the Electrical Trade Device Boxes module 26106-14</p>
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Indicator # BT 8 Employ basic knowledge and methods of concrete technology

<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Level 1 Recall	<p>BT8.1 Identify safe practice associated with concrete materials</p> <p>Examples:</p> <ul style="list-style-type: none"> • Name basic codes and techniques of concrete construction applications • Describe safe use of concrete tools • List concrete terminology and uses of concrete 	<p>Learn to make decisions</p> <p>NCCER Concrete Finishing Level One Introduction to Concrete Construction and Finishing module 23101</p> <p>NCCER Concrete Finishing Level One Safety Requirements module 23102</p>
Level 3 Strategic Thinking	<p>BT8.2 Calculate the various required ingredients used in concrete.</p> <p>Examples:</p> <ul style="list-style-type: none"> • Convert formula for making concrete • Interpret procedure for making cement mortar • Concrete testing (slump test, cylinder test, etc.) 	<p>NCCER Concrete Finishing Level One Properties of Concrete module 23103</p>
Level 4 Extended Thinking	<p>BT8.3 Employ application of concrete in different situations.</p> <p>Examples:</p> <ul style="list-style-type: none"> • Operate tools for placing concrete foundations and floors in different situations • Solve finishing procedures for floors, sidewalks, and driveways • Maintain proper maintenance of equipment when project is finished 	<p>Invite a career professional to visit and explain the concrete construction</p> <p>Interact and work cooperatively as a team member on construction crew</p> <p>NCCER Concrete Finishing Level One Tools and Equipment module 23104</p>

Notes:

Indicator # BT 9 Student will participate in career exploration activities

<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Level 4 Extended Thinking	BT9.1 Research career opportunities in the architecture and construction fields. Examples: <ul style="list-style-type: none"> • Utilizing career exploration software, research and write a report on career opportunities in the Architecture and Construction fields • Utilize career exploration software to research educational requirements for chosen career path • Utilizing career exploration software, update student’s portfolio • Utilize industry speaker 	Invite a career professional to visit Identify personal skills, interests and abilities and relate them to current career choice Learn to use the Internet to access career/planning information Document information into MyLife portfolio Apply decision making skills to career planning, course selection and career transition

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