Department of Teaching & Learning
Parent/Student Course Information

Construction Technology
(VO8515)
Three Credits, One Year
Grades 10 - 12

Counselors are available to assist parents and students with course selections and career planning. Parents may arrange to meet with the counselor by calling the school's guidance department.

COURSE DESCRIPTION
This exploratory program is an introductory component of the four main residential building trades: carpentry, electricity, masonry and plumbing. Students learn basic construction safety, skills and concepts in each trade and make an informed choice as to which area they would like to pursue as a career.

CERTIFICATION
None

STUDENT ORGANIZATION
SkillsUSA is a co-curricular organization for all students enrolled in trade and industrial education programs. SkillsUSA is a partnership of students, teachers and industry working together to ensure America has a skilled workforce. SkillsUSA helps students excel by providing educational programs, events and competitions that support career and technical education (CTE) in the nation’s classrooms. Students are highly encouraged to participate.

PREREQUISITE
None

OPTIONS FOR NEXT COURSE
Carpentry
Electricity
Plumbing
Masonry

REQUIRED STUDENT TEXTBOOK
None
COMPETENCIES FOR CONSTRUCTION TECHNOLOGY

Demonstrating Workplace Readiness Skills: Personal Qualities and People Skills
1. Demonstrate positive work ethic.
2. Demonstrate integrity.
3. Demonstrate teamwork skills.
4. Demonstrate self-representation skills.
5. Demonstrate diversity awareness.
6. Demonstrate conflict-resolution skills.
7. Demonstrate creativity and resourcefulness.

Demonstrating Workplace Readiness Skills: Professional Knowledge and Skills
8. Demonstrate effective speaking and listening skills.
9. Demonstrate effective reading and writing skills.
10. Demonstrate critical-thinking and problem-solving skills.
11. Demonstrate healthy behaviors and safety skills.
12. Demonstrate an understanding of workplace organizations, systems, and climates.
13. Demonstrate lifelong-learning skills.
14. Demonstrate job-acquisition and advancement skills.
15. Demonstrate time-, task-, and resource-management skills.
16. Demonstrate job-specific mathematics skills.
17. Demonstrate customer-service skills.

Demonstrating Workplace Readiness Skills: Technology Knowledge and Skills
18. Demonstrate proficiency with technologies common to a specific occupation.
19. Demonstrate information technology skills.
20. Demonstrate an understanding of Internet use and security issues.
21. Demonstrate telecommunications skills.

Examining All Aspects of an Industry
22. Examine aspects of planning within an industry/organization.
23. Examine aspects of management within an industry/organization.
24. Examine aspects of financial responsibility within an industry/organization.
25. Examine technical and production skills required of workers within an industry/organization.
26. Examine principles of technology that underlie an industry/organization.
27. Examine labor issues related to an industry/organization.
28. Examine community issues related to an industry/organization.
29. Examine health, safety, and environmental issues related to an industry/organization.

Addressing Elements of Student Life
30. Identify the purposes and goals of the student organization.
31. Explain the benefits and responsibilities of membership in the student organization as a student and in professional/civic organizations as an adult.
32. Demonstrate leadership skills through participation in student organization activities, such as meetings, programs, and projects.
33. Identify Internet safety issues and procedures for complying with acceptable use standards.

CORE CONSTRUCTION SKILLS
Applying Basic Construction Safety Standards (Core Safety)
34. Comply with federal, state, and local safety requirements, including OSHA, VOSHA, and EPA.
35. Identify personal protective equipment (PPE) requirements.
36 Inspect and maintain a safe working environment.
37 Explain safe working practices around electrical hazards.
38 Identify emergency first aid procedures.
39 Identify the types of fires and the methods used to extinguish them.
40 Inspect course-specific hand and power tools to visually identify defects.
41 Demonstrate lifting and carrying techniques.
42 Demonstrate safe laddering techniques.
43 Demonstrate safe scaffolding techniques.
44 Report personal injury, environmental and equipment safety violations to the appropriate authority.
45 Earn the OSHA 10 card.
46 Pass safety exams for shop/site safety and specific tool use.

**Applying Fundamental Construction Skills**

47 Identify common construction hand and power tools.
48 Read a ruler.
49 Identify various pipe dimensions.
50 Add, subtract, multiply and divide whole numbers, with and without a calculator.
51 Add, subtract, multiply and divide fractions.
52 Add, subtract, multiply and divide decimals, with and without a calculator.
53 Convert decimals to percent and percent to decimals.
54 Convert fractions to decimals and decimals to fractions.
55 Identify units of length, weight, volume and temperature.
56 Identify the basic geometric formulas for shapes common to construction.
57 Identify basic blueprint terms, components and symbols.
58 Identify different classifications of drawings.

**MASONRY**

**Using Basic Masonry Skills**

59 Identify tools that are specific to masons.
60 Spread mortar.
61 Apply head joints.
62 Bond a brick wall to vertical joint uniformity.
63 Lay running bond wall to the line.
64 Gauge masonry wall with mason's scales.
65 Strike joints.
66 Build a rack-back lead.
67 Build a straight lead.
68 Build corners.
69 Build rectangular brick columns.
70 Identify types and sizes of brick.

**Laying Brick Positions and Bonds**

71 Identify the six brick positions.
72 Lay an American/common bond pattern.
73 Lay an English bond pattern.
74 Lay a Flemish bond pattern.
75 Lay a stack bond pattern.
76 Lay a soldier course.
77 Lay a rowlock course.
Laying Concrete Masonry Units
78 Apply head joints (block).
79 Lay out a block wall.
80 Lay block to the line.
81 Build a block jamb.
82 Build a block corner.
83 Gauge block walls.
84 Identify types and sizes of block.

Identifying and Mixing Masonry Cements
85 Mix masonry cements.
86 Select masonry cement based on a specific job.

CARPENTRY
Using Basic Carpentry Skills
87 Identify tools that are specific to carpenters.
88 Check stock and/or assemblies for squareness.
89 Determine levelness and plumbness of surfaces.
90 Handle and store materials.
91 Identify materials.
92 Maintain hand tools.
93 Fasten stock with metal fasteners.
94 Cut and shape stock.

Framing a Floor
95 Identify the sill plate.
96 Identify the floor joists and crown.
97 Identify bridging and blocking.
98 Identify subfloor sheathing.

Framing Walls
99 Cut wall plates.
100 Identify studs, headers, jacks, rough sills and cripples.
101 Identify framing layout on wall plates.
102 Identify corner and tee posts.
103 Identify types of headers.
104 Identify types of door openings.
105 Identify types of window openings.
106 Identify metal stud framing procedures.
107 Identify types of exterior wall sheathing.

ELECTRICITY
Applying Basics of Electricity
108 Describe basic electrical theory.
109 Identify tools that are specific to electricians.
110 Identify basic electrical wiring devices.

Selecting and Installing Conductors
111 Identify types of conductors.
112 Install conductors.
113 Make connections with lugs, connectors and terminals.
114 Select conductors for specific applications.
115 Install nail guards to protect conductors.

PLUMBING

Performing Plumbing Basics, Cutting and Joining Pipe
116 Identify tools that are specific to plumbers.
117 Cut and deburr copper tubing.
118 Cut plastic pipe with PVC/ABS saw or approved cutter.
119 Construct copper tubing assembly, using solder joints.
120 Calculate fitting allowance.
121 Join plastic pipe (i.e., tubing) to fittings, using solvent method.
122 Join PEX pipe (i.e., tubing), using crimp fittings.

Describing Water Recycling Systems
123 Describe the process and functions of sewage treatment systems.
124 Describe the process and functions of water supply systems.
Aaron C. Spence, Ed.D., Superintendent
Virginia Beach City Public Schools
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For further information please call (757) 263-1070.

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To seek resolution of grievances resulting from alleged discrimination or to report violations of these policies, please contact the Title VI/Title IX Coordinator/Director of Student Leadership at (757) 263-2020, 1413 Laskin Road, Virginia Beach, Virginia, 23451 (for student complaints) or the Section 504/ADA Coordinator/Chief Human Resources Officer at (757) 263-1133, 2512 George Mason Drive, Municipal Center, Building 6, Virginia Beach, Virginia, 23456 (for employees or other citizens). Concerns about the application of Section 504 of the Rehabilitation Act should be addressed to the Section 504 Coordinator/ Executive Director of Student Support Services at (757) 263-1980, 2512 George Mason Drive, Virginia Beach, Virginia, 23456 or the Section 504 Coordinator at the student’s school. For students who are eligible or suspected of being eligible for special education or related services under IDEA, please contact the Office of Programs for Exceptional Children at (757) 263-2400, Laskin Road Annex, 1413 Laskin Road, Virginia Beach, Virginia, 23451.

Alternative formats of this publication which may include taped, Braille, or large print materials are available upon request for individuals with disabilities. Call or write The Department of Teaching and Learning, Virginia Beach City Public Schools, 2512 George Mason Drive, P.O. Box 6038, Virginia Beach, VA 23456-0038. Telephone 263-1070 (voice); fax 263-1424; 263-1240 (TDD) or email at Brandon.Martin@vbschools.com.

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VIRGINIA BEACH CITY PUBLIC SCHOOLS
CHARTING THE COURSE

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