



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 Personal Qualities and Abilities

- 1 Demonstrate creativity and innovation.
- 2 Demonstrate critical thinking and problem solving.
- 3 Demonstrate initiative and self-direction.
- 4 Demonstrate integrity.
- 5 Demonstrate work ethic.

Demonstrating Interpersonal Skills

- 6 Demonstrate conflict-resolution skills.
- 7 Demonstrate listening and speaking skills.
- 8 Demonstrate respect for diversity.
- 9 Demonstrate customer service skills.
- 10 Collaborate with team members.

Demonstrating Professional Competencies

- 11 Demonstrate big-picture thinking.
- 12 Demonstrate career- and life-management skills.
- 13 Demonstrate continuous learning and adaptability.
- 14 Manage time and resources.
- 15 Demonstrate information-literacy skills.
- 16 Demonstrate an understanding of information security.
- 17 Maintain working knowledge of current information-technology (IT) systems.
- 18 Demonstrate proficiency with technologies, tools, and machines common to a specific occupation.
- 19 Apply mathematical skills to job-specific tasks.
- 20 Demonstrate professionalism.
- 21 Demonstrate reading and writing skills.
- 22 Demonstrate workplace safety.

Examining All Aspects of an Industry

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

Addressing Elements of Student Life

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

Exploring Work-Based Learning

- 35 Identify the types of work-based learning (WBL) opportunities.

- 36 Reflect on lessons learned during the WBL experience.
- 37 Explore career opportunities related to the WBL experience.
- 38 Participate in a WBL experience, when appropriate.

CORE CONSTRUCTION SKILLS

Applying Basic Construction Safety Standards (Core Safety): Electricity I

- 39 Comply with federal, state, and local safety legal requirements.
- 40 Earn the OSHA 10-hour card.
- 41 Identify personal protective equipment (PPE) requirements.
- 42 Maintain a safe working environment.
- 43 Explain safe working practices around electrical hazards.
- 44 Identify emergency first-aid procedures.
- 45 Identify the types of fires and the methods used to extinguish them.
- 46 Inspect course-specific hand and power tools to identify defects.
- 47 Demonstrate lifting and carrying techniques.
- 48 Demonstrate safe laddering techniques.
- 49 Demonstrate safe scaffolding techniques.
- 50 Report personal injury, violations of environmental regulations, and equipment safety violations to the appropriate authority.
- 51 Pass the safety exam.

Understanding Local, State, and Federal Regulations

- 52 Identify local, state, and federal regulations for a tradesman license.
- 53 Identify local, state, and federal regulations for operating a business.

Applying Fundamental Construction Skills

- 54 Identify common hand and power tools.
- 55 Identify units of length, weight, volume, and temperature.
- 56 Read a ruler.
- 57 Demonstrate the use of instruments for measurement.
- 58 Identify various pipe dimensions.
- 59 Solve mathematical problems.
- 60 Convert decimals to percents and percents to decimals.
- 61 Convert fractions to decimals and decimals to fractions.
- 62 Identify the basic geometric formulas for shapes common in construction.
- 63 Identify basic blueprint terms, components, and symbols.
- 64 Identify classifications of drawings.

MASONRY

Using Masonry Skills

- 65 Identify tools specific to masons.
- 66 Spread mortar.
- 67 Apply head joints.
- 68 Strike joints.
- 69 Identify types and sizes of brick.

Laying Concrete Masonry Units

- 70 Apply block head joints.
- 71 Identify types and sizes of block.

Identifying and Mixing Masonry Cements

- 72 Mix masonry cements.
- 73 Select masonry cement based on a specific job.

CARPENTRY

Using Basic Carpentry Skills

- 74 Identify tools specific to carpenters.
- 75 Check stock and/or assemblies for squareness.
- 76 Determine whether surfaces are level or plumb.
- 77 Handle and store materials.
- 78 Identify materials.
- 79 Maintain hand tools.
- 80 Cut stock.

Framing a Floor

- 81 Identify the sill plate.
- 82 Identify the floor joists and crown.

Framing Walls

- 83 Cut wall plates.
- 84 Identify studs, headers, jacks, rough sills, and cripples.
- 85 Identify the framing layout on wall plates.
- 86 Identify corner and tee posts.
- 87 Identify the parts of an exterior wall system.

ELECTRICITY

Applying Basics of Electricity

- 88 Describe basic electrical theory.
- 89 Identify tools specific to electricians.
- 90 Identify basic electrical wiring devices.
- 91 Describe installation procedures for GFCI and AFCI devices.
- 92 Identify a transformer.
- 93 Wire basic residential switching operations.
- 94 Wire duplex receptacles.
- 95 Wire GFCI receptacles.

Selecting and Installing Conductors

- 96 Identify types of conductors.
- 97 Install conductors.
- 98 Make connections with lugs, connectors, and terminals.
- 99 Select conductors for specific applications.
- 100 Install nail plates to protect conductors.

PLUMBING

Performing Plumbing Basics

- 101 Identify tools specific to plumbers.
- 102 Cut copper tubing.
- 103 Cut plastic pipe.
- 104 Construct copper tubing assembly, using solder joints.
- 105 Calculate fitting allowance.

- 106 Join plastic pipe (i.e., tubing) to fittings, using solvent.
- 107 Join cross-linked polyethylene (PEX) pipe (i.e., tubing), using crimp fittings.

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Produced by the Department of Teaching and Learning.
For further information, please call (757) 263-1070.

Notice of Non-Discrimination Policy

Virginia Beach City Public Schools does not discriminate on the basis of race, color, religion, national origin, sex, sexual orientation/gender identity, pregnancy, childbirth or related medical condition, disability, marital status, age, genetic information or veteran status in its programs, activities, employment, or enrollment, and provides equal access to the Boy Scouts and other designated youth groups. School Board policies and regulations (including, but not limited to, Policies 2-33, 4-4, 5-7, 5-19, 5-20, 5-44, 6-33, 6-7, 7-48, 7-49, 7-57 and Regulations 4-4.1, 4-4.2, 5-44.1, 7-11.1, 7-17.1 and 7-57.1) provide equal access to courses, programs, enrollment, counseling services, physical education and athletic, vocational education, instructional materials, extracurricular activities and employment.

Title IX Notice: Complaints or concerns regarding discrimination on the basis of sex or sexual harassment should be addressed to the Title IX Coordinator, at the VBCPS Office of Student Leadership, 641 Carriage Hill Road, Suite 200, Virginia Beach, 23452, (757) 263-2020, Mary.Dees@vbschools.com (student complaints) or the VBCPS Department of School Leadership, 2512 George Mason Drive, Municipal Center, Building 6, Virginia Beach, Virginia, 23456 (757) 263-1088, Elizabeth.Bryant@vbschools.com (employee complaints). Additional information regarding Virginia Beach City Public Schools' policies regarding discrimination on the basis of sex and sexual harassment, as well as the procedures for filing a formal complaint and related grievance processes, can be found in School Board Policy 5-44 and School Board Regulations 5-44.1 (students), School Board Policy 4-4 and School Board Regulation 4-4.3 (employees), and on the School Division's website at [Diversity, Equity and Inclusion/Title IX](#). 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, Plaza Annex/Family and Community Engagement Center, 641 Carriage Hill Road, Suite 200, Virginia Beach, VA 23452.

The School Division is committed to providing educational environments that are free of discrimination, harassment, and bullying. Students, staff, parents/guardians who have concerns about discrimination, harassment, or bullying should contact the school administration at their school. Promptly reporting concerns will allow the school to take appropriate actions to investigate and resolve issues. School Board Policy 5-7 addresses non-discrimination and anti-harassment, Policy 5-44 addresses sexual harassment and discrimination based on sex or gender. Policy 5-36 and its supporting regulations address other forms of harassment.

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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