



Department of Teaching & Learning
Parent/Student Course Information

Control Technology Program
Electronic Systems II
(TE 8412)
Grades 10 - 12
One Credit, One Year

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

The courses in engineering and technology provide opportunities for students to acquire skills and knowledge necessary for technological literacy, entry-level careers, and lifelong learning. Students learn Virginia's 21 Workplace Readiness Skills within the content area. Those who are completing a two-year sequence have the opportunity to verify their knowledge of the workplace readiness skills through an industry assessment. Students work with electronics devices, instruments, and circuits, building and designing devices to apply theories and laws with electronic components such as resistors, capacitors and transistors. They also study integrated circuits used in computers, amplifiers, communication and other applications.

CERTIFICATION

Students successfully completing the Control Technology Program of Study will be prepared for the NOCTI Industry Credential in Electronics Technology or Small Engines.

STUDENT ORGANIZATION

Technology Student Association (TSA) is a co-curricular organization for all students enrolled in engineering and technology courses. Students are encouraged to be active members of their youth organization to develop leadership and teamwork skills and to receive recognition for their participation in local, regional, state and national activities.

PREREQUISITE

Electronics Systems I

OPTIONS FOR NEXT COURSE

Introduction to Engineering

REQUIRED STUDENT TEXTBOOK

Introduction to Electronics

COMPETENCIES FOR ELECTRONIC SYSTEMS II

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.

Exploring the Electronics Industry

- 34 Demonstrate the safe and proper use of electronics equipment, tools, and lab machines.
- 35 Research occupational opportunities in electricity and electronics technology.

Exploring Semiconductor Devices

- 36 Describe the atomic structure and construction methods of semiconductors.
- 37 Describe the characteristics, operation, and applications of basic semiconductor devices.
- 38 Describe types of oscillators.
- 39 Describe the basic characteristics of amplifiers.
- 40 Construct an amplifier circuit and verify the characteristics.
- 41 Describe the characteristics, operation and applications of power-supply circuits.
- 42 Construct a power-supply circuit.
- 43 Describe modulation methods.
- 44 Classify integrated circuits.
- 45 Test digital integrated circuits.
- 46 Design circuits containing integrated circuit components.

Exploring Digital Components

- 47 Compare analog and digital devices.
- 48 Analyze digital and microprocessor circuit characteristics, using circuit simulation software.
- 49 Construct analog-to-digital and digital-to-analog circuits.
- 50 Describe the function of major components used in implementing digital circuits.
- 51 Describe the primary functions of the essential internal and external components of a microprocessor.
- 52 Design a device to be controlled by a microcontroller.
- 53 Manipulate the microcontroller device, using object-oriented programming.

Exploring Logic Circuits

- 54 Convert between the binary and decimal number systems.
- 55 Describe Boolean logic and its role in logic circuits.
- 56 Describe the operation of basic logic circuits.
- 57 Describe logic gates and their functions.
- 58 Describe the characteristics of sequential and combinational logic circuits.
- 59 Compare combinational and sequential logic.
- 60 Describe the function of AND, OR, and inverter gates.
- 61 Design a basic logic circuit.
- 62 Simulate a simple, combinational logic circuit designed with AND, OR, and inverter gates.
- 63 Construct a functional, combinational logic circuit, using logic gates.
- 64 Describe the function of a D flip-flop.
- 65 Simulate a simple, sequential logic circuit design with D flip-flops.
- 66 Construct logic circuits to meet design-brief goals.

Aaron C. Spence, Ed.D., Superintendent
Virginia Beach City Public Schools
2512 George Mason Drive, Virginia Beach, VA 23456-0038

Produced by the Department of Media and Communications for 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 and activities 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, 6-7, 6-33, 7-48, 7-49, 7-57 and Regulations 2-33.1, 4-4.1, 4-4.2, 4-4.3, 4-6.1, 5-44.1, 7-11.1, 7-17.1 and 7-57.1) provide equal access to courses, programs, counseling services, physical education and athletic, vocational education, instructional materials and extracurricular activities.

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 Charles.Hurd@vbschools.com.

vbschools.com
your virtual link to Hampton Roads' largest school system



VIRGINIA BEACH CITY PUBLIC SCHOOLS
CHARTING THE COURSE

No part of this publication may be produced or shared in any form without giving specific credit to Virginia Beach City Public Schools.

(Revised August 2018)