



Department of Teaching & Learning
Parent/Student Course Information

Telecommunications II
(AT8681)
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

While participating in this course of study, students may begin preparation for careers with corporations such as Cox Communications, Verizon, Nortel or Direct TV. Students learn to install telephone, television, surround sound, security systems, closed-circuit television and internet connections. Students work in a lab setting and install current technology.

CERTIFICATION

Residential Satellite Technician
Certified Fiber Optics Installer (FOI)
Data Cabling Installer (DCIC)

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

Telecommunications I

OPTIONS FOR NEXT COURSE

None

REQUIRED STUDENT TEXTBOOK

None

COMPETENCIES FOR TELECOMMUNICATIONS 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.

Examining Customer Relations

- 34 Explain how a customer service specialist may encounter problems with customers, fellow workers or allied personnel.
- 35 Describe ways to resolve customer conflicts.

- 36 Explain outages and other weather or natural phenomena and ways to soothe customer complaints regarding them.
- 37 Analyze the costs to perform in-house and outside service work.
- 38 Demonstrate “customer orientation” procedures used with customers who may be unfamiliar with the equipment you have installed.
- 39 Contrast poor cabling and wire-dressing work with good-quality wiring and installation.
- 40 Describe ways the service technician can help his company by assisting the sales or marketing functions of the business.

Practicing Cabling and Splicing

- 41 Contrast unshielded twisted pair (UTP), shielded twisted pair (STP), and screened twisted pair (ScTP) cable.
- 42 Demonstrate ability to install RJ-45, RJ-11, F-type, and BNC connectors.
- 43 Construct a cable TV network capable of transferring data and voice services.
- 44 Differentiate among coaxial cables.
- 45 Compare signal transmission capabilities of coaxial cable, CAT-5 cable and fiber cabling.
- 46 Explain signal losses associated with long cable runs.
- 47 Construct a grounding subsystem for a telecommunications system.
- 48 Describe usage of cables for special applications (e.g., plenum, aerial, direct burial).
- 49 Analyze the effects of common cable casualties.
- 50 Explain impedance and impedance-matching requirements.

Working with Wireless Networks

- 51 Explore home and commercial wireless networking solutions.
- 52 Construct a wireless network.

Working with Optical Wiring

- 53 Execute the steps in handling and disposal of optical fiber.
- 54 Classify types of optical cables, including different parameters of each.
- 55 List the components used in the construction of fiber optic cable.
- 56 Identify components of fiber optic cable.
- 57 Terminate different types of fiber cable (loose-tube, break-out, armored, etc.).
- 58 Demonstrate splicing methods.
- 59 Identify different types of fiber connectors.
- 60 Describe the effect of distance on copper and fiber service.
- 61 Demonstrate the use of light meters and light sources.
- 62 Explain the electrical to optical conversion process.
- 63 Explain synchronous optical network (SONET) and dense wavelength division multiplexing (DWDM).

Examining Digital Telephones

- 64 Research historical voice and data solutions.
- 65 Compare the advantages of bundled and unbundled telephone services from the perspective of providers and customers.

Exploring Satellite Telecommunication

- 66 Describe the C and Ku frequency bands.
- 67 Describe the function of a Low Noise Block Downconverter (LNBD).
- 68 Explain the components of common satellite signals.
- 69 Explain the functions of a common satellite receiver.
- 70 Describe the focal point and the focal distance of a dish.
- 71 Explain the function of fixed, diode-switching and dual-feed feedhorns.

- 72 Describe the installation, calibration and testing of different types of dishes.
- 73 Analyze distribution problems in the input and output feeds.
- 74 Compare different types of antennas for distribution of satellite feeds.

Examining Building and Office Wiring

- 75 Research wiring standards.
- 76 Distinguish among the methods of pre-wiring and ways to wire existing structures.
- 77 Explain the National Electrical Code (NEC) or other safety rules pertaining to structural wiring.

Developing Employability Skills

- 78 Investigate careers in the information technology field.
- 79 Create a printed résumé, including a résumé format suitable for posting online.
- 80 Research certification and educational opportunities.
- 81 Compose a letter of application.
- 82 Complete an electronic application form.
- 83 Compose an interview follow-up letter.
- 84 Identify the steps to follow in resigning from a position.
- 85 Develop a portfolio containing representative samples of a student's work and make an oral presentation.
- 86 Identify potential employment barriers for nontraditional groups and ways to overcome the barriers.
- 87 Research opportunities for government or government contractor employment.

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

Notice of Non-Discrimination Policy

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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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CHARTING THE COURSE

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