

TECHNICAL COMPUTER APPLICATIONS



PURPOSE

To evaluate each contestant's preparation for employment and to recognize outstanding students for excellence and professionalism in the field of technical computer applications.

First, download and review the General Regulations at: <http://updates.skillsusa.org>.

ELIGIBILITY

Open to active SkillsUSA members enrolled in programs with computer literacy as part or all of the occupational objective.

CLOTHING REQUIREMENTS

Class E: Contest Specific — Business Casual

- Official SkillsUSA white polo shirt.
- Black dress slacks (accompanied by black dress socks or black or skin-tone seamless hose) or black dress skirt (knee-length, accompanied by black or skin-tone seamless hose).
- Black leather closed-toe dress shoes.

These regulations refer to clothing items that are pictured and described at: www.skillsusastore.org. If you have questions about clothing or other logo items, call 1-888-501-2183.

Note: Contestants must wear their official contest clothing to the contest orientation meeting.

EQUIPMENT AND MATERIALS

1. Supplied by technical committee:
 - a. Power strip
 - b. Network storage and networking equipment to connect to an Ethernet network
2. Supplied by the contestant:
 - a. Computer with the following minimum specifications
 1. Computer/laptop manufactured within last 24 months

2. NIC card for a wired Ethernet connection
 3. Full administrative rights with all user passwords disabled or uninstalled
 4. Virtualization software such as VMware Player or VirtualBox
 5. The latest releases of VMware Horizon and AWS Workspace Software from <http://tcanationals.com/software>
- b. All competitors must create a one-page résumé and submit a hard copy to the technical committee chair at orientation. Failure to do so will result in a 10-point penalty.
3. Any changes to the hardware or software requirements will be announced annually in the SkillsUSA Championships update at: <http://updates.skillsusa.org>.
 4. No phones or tablets will be allowed during the contest.

Note: Your contest may also require a hard copy of your résumé as part of the actual contest. Check the Contest Guidelines and/or the updates page on the SkillsUSA website at <http://updates.skillsusa.org>.

SCOPE OF THE CONTEST

This contest is defined by industry standards as set by the current industry technical standards. The contest assesses the ability of a candidate to perform jobs and skills selected from the list of competencies as determined by the SkillsUSA Championships technical committee.

Knowledge Performance

A written exam will be given that covers the installation and operation of the software, hardware and cabling plus general computer support knowledge. Topics also include information as related to the Internet, networking and data sharing. There will be additional questions related to professional development.

Skill Performance

A series of demonstrations will be performed during the skill performance portion of this contest. The competencies outlined by the contest technical committee will be used as the

foundation for this assessment. Contestants should be familiar with using a Windows, Linux and/or macOS-based operating system. All work must be done independently.

Standards and Competencies

TECH 1.0 — Administer topics relating to the Internet standards and guidelines as set forth by the technical committee

- 1.1 Describe email functions
- 1.2 Demonstrate knowledge of cloud computing
- 1.3 Explain networking processes
- 1.4 Display knowledge of server installation
- 1.5 Describe wireless and Bluetooth technology

TECH 2.0 — Install and configure an operating system per standards and guidelines as set forth by the technical committee

- 2.1 Modify the configuration setting for an operating system
- 2.2 Create users and policies for users
- 2.3 Manipulate application software as needed
- 2.4 Demonstrate technical troubleshooting Abilities
- 2.5 Display an ability to work in a team environment to develop solutions to common business problems

TECH 3.0 — Demonstrate the use of application software per standards and guidelines as set forth by the technical committee

- 3.1 Use features in data management
 - 3.1.1 Importing and exporting data
 - 3.1.2 Knowledge of SQL and DML (Data Manipulation Language)
 - 3.1.3 Web & data source scraping, including data from APIs
 - 3.1.4 Creating and editing reports
 - 3.1.5 Normalizing and denormalizing
 - 3.1.6 Developing and maintaining data schemas
 - 3.1.7 Data security best practices
 - 3.1.8 Analyzing data for common business purposes
- 3.2 Use features in word processing
 - 3.2.1 Format text and paragraphs
 - 3.2.2 Apply and format columns

- 3.2.3 Insert and modify content in headers and footers
 - 3.2.4 Modify document layout and page setup
 - 3.2.5 Create new documents using a template
 - 3.2.6 Review and modify document properties
 - 3.2.7 Organize documents using file folders
 - 3.2.8 Save documents in appropriate formats for different users
 - 3.2.9 Print documents, envelopes and labels
 - 3.2.10 Preview documents and Web pages
 - 3.2.11 Insert and edit text, symbols and special characters
 - 3.2.12 Insert frequently used and pre-defined text
 - 3.2.13 Navigate to specific content
 - 3.2.14 Insert, position and size graphics
 - 3.2.15 Create and modify diagrams and charts
 - 3.2.16 Locate, select and insert supporting information
 - 3.2.17 Change and organize document views and windows
 - 3.2.18 Insert and modify tables
 - 3.2.19 Create bulleted lists, numbered lists and outlines
 - 3.2.20 Insert and modify hyperlinks
 - 3.2.21 Circulate documents for review
 - 3.2.22 Compare and merge documents
 - 3.2.23 Insert, view and edit comments
 - 3.2.24 Track, accept and reject proposed changes
- 3.3 Use features of spreadsheets
 - 3.3.1 Enter and edit cell content
 - 3.3.2 Locate specific cell content
 - 3.3.3 Locate, select and insert supporting information
 - 3.3.4 Insert, position and size graphics
 - 3.3.5 Filter lists using the AutoFilter feature
 - 3.3.6 Sort lists
 - 3.3.7 Insert and modify formulas
 - 3.3.8 Use statistical, date and time, financial and logical functions
 - 3.3.9 Create, modify and position diagrams and charts based on worksheet data
 - 3.3.10 Apply and modify cell formats
 - 3.3.11 Apply and modify cell styles

- 3.3.12 Modify row and column formats
- 3.3.13 Format worksheets
- 3.3.14 Insert, view and edit comments
- 3.3.15 Create new workbooks from templates
- 3.3.16 Insert, delete and move cells
- 3.3.17 Create and modify hyperlinks
- 3.3.18 Organize worksheets
- 3.3.19 Preview data in other views
- 3.3.20 Customize window layout
- 3.3.21 Build and develop complex formulas involving multiple sheets and/or logic statements
- 3.3.22 Organize workbooks using file folders
- 3.3.23 Save data in appropriate formats for different uses
- 3.4 Use features in presentation software
 - 3.4.1 Create new presentations from templates
 - 3.4.2 Insert and edit text-based content
 - 3.4.3 Insert tables, charts and diagrams
 - 3.4.4 Insert pictures, shapes and graphics
 - 3.4.5 Insert objects
 - 3.4.6 Format text-based content
 - 3.4.7 Format pictures, shapes and graphics
 - 3.4.8 Format slides
 - 3.4.9 Apply animation schemes
 - 3.4.10 Apply slide transitions
 - 3.4.11 Customize slide templates
 - 3.4.12 Work with masters
 - 3.4.13 Track, accept and reject changes in a presentation
 - 3.4.14 Add, edit and delete comments in a presentation
 - 3.4.15 Compare and merge presentations
 - 3.4.16 Organize a presentation
 - 3.4.17 Set up slide shows for delivery
 - 3.4.18 Rehearse timing
 - 3.4.19 Deliver presentations
 - 3.4.20 Prepare presentations for remote delivery
 - 3.4.21 Save and publish presentations
 - 3.4.22 Print slides, outlines, handouts and speaker notes
 - 3.4.23 Export a presentation to another Microsoft Office program
- 3.5 Web page development tools
- 3.6 Web browser

TECH 4.0 — Complete a hands-on demonstration of basic programming & scripting per standards and guidelines as set forth by the technical committee

- 4.1 Exhibit knowledge of one or more scripting languages (Javascript, Python, Ruby, Powershell, etc)
- 4.2 Demonstrate ability to outline logic flow of common business scenarios
- 4.3 Employ knowledge of networking data flow

Committee Identified Academic Skills

The technical committee has identified that the following academic skills are embedded in this contest.

Math Skills

- Use fractions to solve practical problems.
- Use proportions and ratios to solve practical problems.
- Solve practical problems involving percentages.
- Solve single variable algebraic expressions.
- Solve multiple variable algebraic expressions.
- Apply transformations (rotate or turn, reflect or flip, translate or slide and dilate or scale) to geometric figures.
- Make predictions using knowledge of probability.
- Make comparisons, predictions and inferences using graphs and charts.
- Organize and describe data using matrixes.
- Solve problems using proportions, formulas and functions.
- Use laws of exponents to perform operations.

Science Skills

None Identified

Language Arts Skills

- Provide information in conversations and in group discussions.
- Provide information in oral presentations.
- Demonstrate use of such verbal communication skills as word choice, pitch, feeling, tone and voice.
- Demonstrate use of such nonverbal communication skills as eye contact,

- posture and gestures using interviewing techniques to gain information.
- Demonstrate comprehension of a variety of informational texts.
- Use text structures to aid comprehension.
- Organize and synthesize information for use in written and oral presentations.
- Demonstrate knowledge of appropriate reference materials.
- Use print, electronic databases and online resources to access information in books and articles.

Connections to National Standards

State-level academic curriculum specialists identified the following connections to national academic standards.

Math Standards

- Algebra.
- Data analysis and probability.
- Problem solving.
- Communication.
- Connections.
- Representation.

Source: NCTM Principles and Standards for School Mathematics. For more information, visit: <http://www.nctm.org>.

Science Standards

- Understands the sources and properties of energy.
- Understands the nature of scientific inquiry.
- Understands the scientific enterprise.

Source: McREL compendium of national science standards. To view and search the compendium, visit: <http://www2.mcrel.org/compendium/browse.asp>.

Language Arts Standards

- Students apply a wide range of strategies to comprehend, interpret, evaluate and appreciate texts. They draw on their prior experience, their interactions with other readers and writers, their knowledge of word meaning and of other texts, their word identification strategies and their understanding of textual features (e.g., sound-letter correspondence, sentence structure, context, graphics).

- Students adjust their use of spoken, written and visual language (e.g., conventions, style, vocabulary) to communicate effectively with a variety of audiences and for different purposes.
- Students employ a wide range of strategies as they write and use different writing process elements appropriately to communicate with different audiences for a variety of purposes.
- Students apply knowledge of language structure, language conventions (e.g., spelling and punctuation), media techniques, figurative language and genre to create, critique and discuss print and non-print texts.
- Students use a variety of technological and information resources (e.g., libraries, databases, computer networks, video) to gather and synthesize information and to create and communicate knowledge.
- Students use spoken, written and visual language to accomplish their own purposes (e.g., for learning, enjoyment, persuasion and the exchange of information).

Source: IRA/NCTE Standards for the English Language Arts. To view the standards, visit: www.ncte.org/standards.