

GEOSPATIAL TECHNOLOGY



PURPOSE

To evaluate each contestant's preparation for employment and to recognize outstanding students for excellence and professionalism in the field of Geospatial Technology. Geospatial Technicians should call upon experience with Geographic Information Systems, Remote Sensing, and GPS technology to analyze and visualize spatial data.

First, refer to General Regulations, Page 9.

CLOTHING REQUIREMENT

For men: Official SkillsUSA white polo shirt with black dress slacks, black socks and black leather shoes.

For women: Official SkillsUSA white polo shirt with black dress slacks or skirt, black socks or black or clear seamless hose and black leather 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 800-401-1560 or 703-956-3723.

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

ELIGIBILITY

Open to active SkillsUSA members enrolled in geospatial technology programs with employment in the geospatial industry as the occupational objective. This includes GIS programs, Remote Sensing Programs, Surveying Programs, or any industry that includes geospatial technology as part of its focus.

EQUIPMENT AND MATERIALS

1. Supplied by the technical committee:
 - a. All data required for applied assessments
 - b. Outlets to accommodate one workstation and monitor
 - c. Qualifying contestants will receive the STARS certification kits via mail including a 60-day license of ESRI ArcView 9.3 software and instructions on this year's STARS Geospatial Project. Contestants will need to prepare this project in advance and bring it to the contest. Successful completion of this project and the written exam will count toward the final score as well as earn the contestant the STARS Geospatial Certification.

2. Supplied by contestants:
 - a. Computer Workstation with ArcGIS Desktop with the following extensions enabled: 3D Analyst, Network Analyst, and Spatial Analyst
 - b. Two sharpened pencils
 - c. Notepad (size optional)
 - d. Reference Manuals (Optional – Available for use during application exam)
 - s. One-page, typewritten résumé

SCOPE OF THE CONTEST

APPLICATION PERFORMANCE

Prior to arriving at the contest, each contestant must complete the STARS Application Project using the materials outlined in Equipment and Materials, 1c. Successful completion of this project as well as earning 150 points on the written exam portion will earn the student the STARS Geospatial Certification in addition to counting to their overall score. This project assesses the contestant's ability to demonstrate geospatial and project management skills.

KNOWLEDGE PERFORMANCE

The contest will include a 100-question written knowledge exam assessing general knowledge of Geospatial Technology.

SKILL PERFORMANCE

The contest includes a series of 5 application questions designed to assess a contestant's ability to use geospatial technologies to analyze a scenario or solve a spatial problem.

These problems will assess a variety of skills including but not limited to:

Knowledge of Coordinate Systems and Projections
Data Preparation
Data Manipulation
Map Analysis
Data Creation
Map Layout and Presentation

Standards and Competencies

GEO 1.0 — GIS Fundamentals

- 1.1 Working Knowledge of Coordinate Systems, Projection, and Scale
- 1.2 Analyzing Geospatial Data including:
 - Buffers
 - Unions
 - Merges
 - Overlays
 - Clipping
- 1.3 Querying Geospatial Data by Attributes and Spatial Location
- 1.4 Creating New Vector Data from Imagery, Collected GPS Data, and Geocoding Addresses
- 1.5 Displaying Geospatial Data using Symbology and Map Scale Options to Create Effective Layouts
- 1.6 Managing Geospatial Data including:
 - Joining Data
 - Georeferencing
 - Dissolving
 - Projecting and Reprojecting Data
- 1.7 Creating Reports and Graphs of Geospatial Data

- 1.8 Editing Geospatial Data Features and Attributes including but not limited to:
 - Adding Fields
 - Calculating Fields
 - Splitting Features
 - Merging Features
 - Editing Vertices
 - Moving Features

GEO 2.0 — Remote Sensing Basics

- 2.1 Utilizing Aerial Photography/Single band Imagery
- 2.2 Utilizing Multispectral Imaging
- 2.3 Displaying and Symbolizing Raster Data

GEO 3.0 — Extended GIS Tools

- 3.1 Familiarity with Surface Analysis
- 3.2 Mapping Density
- 3.3 Mapping Distance
- 3.4 Interpolation
- 3.5 Grid Statistics
- 3.6 Visualizing geospatial data in 2D and 3D environments
- 3.7 Modeling Networks
- 3.8 Conducting Best Route Analysis
- 3.9 Determining Closest Facility

GEO 4.0 — Project Management

- 4.1 Project Planning including but not limited to: problem identification; project objectives; stakeholder analysis; determining area of interest; determining feasibility; determining functional requirements; project design
- 4.2 Project Implementation including but not limited to: resource acquisition; data acquisition; map analysis; layout design
- 4.3 Project Planning including but not limited to: written presentation skills; oral presentation skills; data portability and delivery

SkillsUSA 2010 Geospatial Technology Scoring Guide

Oral Report				200
	Presentation Time 8 – 10 Minutes	30		
	Based on Content in Written Report	40		
	Describes of Analysis	40		
	Includes Conclusions and Suggestions for Further Study	30		
	Delivery is clear and concise	20		
	Presenter effectively uses references notes without reading to audience	20		
	Presenter effectively uses visual aids	20		
Written Report				200
	At least 5 Pages in length	20		
	Summary of the Project Plan, Information on Project Implementation and any Deviations from initial plan	30		
	At least three (3) map layouts with information about the map's importance	50		
	Includes Conclusions and Suggestions for Further Study	50		
	Free from typographical and grammatical errors	20		
	Properly Formatted with consistent formatting throughout	20		
	Bibliography	10		
Application Exam				400
	Application Question 1	80		
	Application Question 2	80		
	Application Question 3	80		
	Application Question 4	80		
	Application Question 5	80		
Written Exam				200
	Each Question	2		
Total Points				1000