

High School: Level 2

Themes, Updates, Clarification and General Notes

**KANSAS DIGITAL SUBMISSIONS ARE DUE:
BY 11:59 PM CST on March 15th, 2022**

ALL Digital Submissions, MUST be saved as a PDF document.
PDFs with URL links are acceptable **IF** they are directing to a site that is hosting a submission for an event such as the link for Webmaster, Video Game Design, Digital Video Production, etc.

DO NOT submit a PDF with a link to a google drive or other protected file format, it must be accessible and downloadable by professionals outside a school district or local group.

Events with a digital submission:

<i>Architectural Design</i>	<i>Biotechnology Design</i>	<i>Board Game Design</i>
<i>Children's Stories</i>	<i>Computer Integrated Manufacturing (CIM)</i>	<i>Data Science and Analytics</i>
<i>Digital Video Production</i>	<i>Engineering Design</i>	<i>Fashion Design and Technology</i>
<i>Flight Endurance</i>	<i>Future Technology and Engineering Teacher</i>	<i>Geospatial Technology</i>
<i>Music Production,</i>	<i>Photographic Technology</i>	<i>Scientific and Technical Visualization (Scivis)</i>
<i>Transportation Modeling</i>	<i>Video Game Design</i>	<i>Webmaster</i>

Advisor Project Submission Link:

<http://judgespro.registermychapter.com/org/jpks-state/conf/jpks-state>

Student/Team Captain Project Submission Link:

<http://judgespro.registermychapter.com/org/jpks-state/conf/jpks-state/student>

*- National Qualifying Event

!- Digital submission

%- State level alternation to the event

Animatronics

Design Problem: Create an animatronic exhibit for the entrance of a children's hospital waiting room. Refer to section "F" in General Rules and Regulations.

UPDATE: Pneumatics is an acceptable use of hydraulics

Items Judged

Demonstration Interview

Model Appearance

Model Function

!Architectural Design

KANSAS Digital Submission Due Date: 11:59 PM CST on March 15th

Include Images of Model in Portfolio

Background:

The National Park Service has been an amazing part of America for many years. The United States Congress made Yellowstone the first national park in 1872. Today, the NPS oversees 417 parks and monuments covering more than 84 million acres. Families plan vacations to explore and enjoy remote areas and nature. The parks strive to provide a safe experience for their visitors. A park ranger not only serves as a source of answers to important questions; park rangers also train and dedicate themselves to be an integral part of safety and the overall NPS experience.

Challenge (Design Considerations and Constraints): The 2022 design problem is to design a park lodge for 12 park rangers to live during the 10 months of the year they work in the park.

1. Conduct research on the types of lodges that are in current national parks for employees.
2. Select and identify the location of national park of the team's choice and incorporate the necessary building codes and materials available in the immediate area.
3. The design must include, as a minimum, a main living area, kitchen facilities, a pantry, library with 4 computer stations, a meeting room for 12 rangers, a storage area, and laundry facilities.
4. The lodge must have 12 individual sleeping rooms that include space for a bed, night stand, foot locker, a three-drawer dresser, a closet, and an exterior window.
5. The design may include one appropriate-sized deck/porch that could serve as the main entrance or an outdoor entertainment/classroom area.
6. Special attention should be incorporated for the source of electricity, water/sewer, and environmentally friendly systems.
7. The finished design can be one or two floors and must be contained on a 150'x200' plot of land.
8. A 24"x24" site board must be used for submitting the model.

UPDATE: Pre-Conference A. Documentation Portfolio includes the following required element: I. A photograph, in PDF format, of the finished model

Full rubric that reflects updates to the criteria/scoring in the Model Section of the rubric. The Assembly Plan/Site Board is no longer a requirement.

Items Judged

Documentation

Design Challenge

Model

Semi-Finalist Presentation/Interview

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!Biotechnology Design

KANSAS Digital Submission Due Date: 11:59 PM CST on March 15th

Include Images of Prototype/Model in Portfolio

Design Challenge: You are employed by an environmental protection company that has been asked to create a solution to control or eradicate cyanobacteria, also known as blue green algae.

UPDATE: The title of the rubric table on page 68 should be “**Display**” instead of “**Digital Display**.” There is no digital requirement for the 2022 national TSA conference.

Items Judged

Documentation

Display (includes possible prototype/model)

Semi-Finalist Presentation/Interview

!Board Game Design

KANSAS Digital Submission Due Date: 11:59 PM CST on March 15th

Include Images of game and all parts pre and post package in Portfolio

Items Judged

Documentation

Packaging

Board Game

Semi-Finalist Presentation/Interview/Demonstration

Chapter Team

The Navy-Blue Blazer with TSA patch is REQUIRED for this event.

Participants in this event will compete as the same team of six (6) in both the preliminary (written exam) and the semifinal (oral presentation) rounds.

%Kansas Quirk: The test is completed according to published schedule which may be prior to the start of the conference.

Items Judged

Written Test

Business Meeting Presentation

!Children's Stories*

KANSAS Digital Submission Due Date: 11:59 PM CST on March 15th

Include Images of Physical Storybook in Portfolio

Theme: Create a book for students in pre-k to 1st grade that showcases/promotes engineering. The solution must also include an activity to accompany the book for teachers to use with their students. The activity needs to be a PDF file submitted at the end of the portfolio documentation.

Items Judged

Documentation

Storybook

Semi-Finalist Reading/Interview

Coding

The following programming languages may be used to complete the assigned problems:

- C (version C11)
- C++ (version C++14)
- C# (version 6.0)
- Java (version 10)
- Javascript (NodeJS version 8.10)
- Python (version 3.6)
- Ruby (version 2.5)
- Swift (version 4.2)

Additional languages may become available as we near the conference.

Participants will complete a series of coding problems site at the conference. Evaluation is based on the successful completion of the problems and the time in which it takes teams to complete all the challenges.

In addition to the specific HS Coding competition rules and regulations, students also must adhere to TSA's general rules (found in the HS competitive events guide).

The USA Computing Olympiad website and the ACM-ICPC International website are helpful resources for the Coding event. Additional resources that can be used to prepare for the event are listed below:

- <https://icpc.baylor.edu/compete/preparation>
- <https://www.codechef.com/>
- <http://www.usaco.org/index.php?page=contests>
- http://blog.hackerearth.com/2013/09/competitive-programming-getting-started_11.html
- <https://www.quora.com/What-is-the-best-strategy-to-improve-my-skills-in-competitive-programming-in-2-3-months>

Items Judged

Solution Development

Testing of Solution

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Computer-Aided Design 2D Architectural*

Students can enter only ONE CAD Event not Both

%Kansas Quirk: Exit interviews may be utilized in lieu of formal scheduled interviews

Items Judged

Solution to Problem

Layout

Architectural Application

Software Utilization

Computer-Aided Design 3D Engineering*

Students can enter only ONE CAD Event not Both

%Kansas Quirk: Exit interviews may be utilized in lieu of formal scheduled interviews

Items Judged

Solution to Problem

Layout

Engineering Application

Software Utilization

!Computer Integrated Manufacturing (CIM)

KANSAS Digital Submission Due Date: 11:59 PM CST on March 15th

Include images of product and manufactured pieces in Portfolio

Design Challenge: Create an original design and build an ice cream scoop.

UPDATE:

Page 124 should read:

B. Materials:

1. The sample work pieces contain the subtractive **and/or** additive (CNC/3D printing) machined parts of the promotional product.

Page 127 should read:

Rubric

Component Analysis/Criteria:

Additive **and/or** Subtractive Manufactured Product

Items Judged

Documentation

Component Analysis

Semi-Finalist Presentation/Interview

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Cybersecurity- Not open at the 2022 State TSA Conference

Data Science and Analytics*

KANSAS Digital Submission Due Date: 11:59 PM CST on March 15th

%Kansas Clarification: Portfolio score determines who presents the Poster; Poster presentation score determines who does finalist problem; no interview after semi-finalist problem released

Items Judged

Documentation
Scientific Poster Presentation
Visualization
Semi-Finalist Problem

Debating Technological Issues*

Theme: Disinformation on the Internet Subtopics

Subtopic #1: Medical research
Subtopic #2: Remote learning
Subtopic #3: AI data collection (Who is spying through devices?)

%Kansas Quirk: Using preliminary rounds depends on the number of teams entered

Items Judged

Debate

Digital Video Production*

KANSAS Digital Submission Due Date: 11:59 PM CST on March 15th

Design Challenge: A day in the life - self, school, family, friends, etc.

Items Judged

Documentation
Video Production
Interview

Dragster Design

UPDATE: The body of the vehicle cannot be designed to cover the wheels in order to improve aerodynamics.

Items Judged

Dragster Construction (Including Drawings)
Semifinalist Interview
Race

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!Engineering Design*

KANSAS Digital Submission Due Date: 11:59 PM CST on March 15th

Include Images of Display and Prototype/Model in Portfolio

Theme: Restore and improve an urban infrastructure

UPDATE: The link in the Overview to the Grand Challenges for Engineering (GCE) should be: <http://www.engineeringchallenges.org/challenges/infrastructure.aspx>

Items Judged

Documentation

Display/Model

Semi-Finalist Presentation/Interview

Essays on Technology*

Items Judged

Essay

Extemporaneous Speech*

MUST place in the top 3 to be eligible to compete in this event at the National Level

There are no preliminary rounds

Item Judged

Speech

!Fashion Design and Technology*

KANSAS Digital Submission Due Date: 11:59 PM CST on March 15th

Include Images of Garments and Patterns in Portfolio

Theme:

Theme: Amusement theme parks open new attractions and rides annually. Create three (3) different prototypes of attire for park employees who operate a new family-friendly ride called the "Power Charger."

The park is open during all seasons throughout the year and this new ride has the color theme of red, white, and navy blue. One (1) of the three (3) prototypes is submitted for evaluation.

Items Judged

Documentation

Patterns

Quality of Garments

Semi-Finalist Presentation/Interview

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!Flight Endurance

KANSAS Digital Submission Due Date: 11:59 PM CST on March 15th

Include Images of Plane and flight box in Portfolio

Items Judged

Documentation

Flight Times

Forensic Science

%Kansas Quirk: The test is completed according to published schedule which may be prior to the start of the conference.

Participants are required to bring the full forensics kit as outlined on p.210.

Items Judged

Written Test (scores averaged)

Analysis of Crime Scene

!Future Technology and Engineering Teacher

KANSAS Digital Submission Due Date: 11:59 PM CST on March 15th

Submit PDF with Instructional Video link, copyright & photo/video consent forms

Two videos for this event no Portfolio component

Items Judged

Instructional Video

Semi-Finalist Lesson Plan Video Presentation

!Geospatial Technology

KANSAS Digital Submission Due Date: 11:59 PM CST on March 15th

Include Images of Infographic Map in Portfolio

%Kansas Clarification: Portfolio score determines which Visual Infographic Map are evaluated; Visual Infographic Map score determines who will participate in the Semi-Final Defense Presentation/Interview

Theme: Research a local, regional, state, or national manufacturing issue

Items Judged

Documentation Portfolio

The Visual Infographic Map

Semi-Final Defense Presentation/Interview

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!Music Production*

KANSAS Digital Submission Due Date: 11:59 PM CST on March 15th

Include link to Audio in the Portfolio

Items Judged

Documentation Portfolio
Musical Piece
Semi-Finalist Interview

On-Demand Video

%Kansas Quirk:

-Teams have approximately **30 hours** to complete and submit their video
-Confirm participation and pick up problem at the registration desk Wednesday beginning at 10:00am. Entries **MUST** be turned in by **4:00pm Thursday** to JudgePro(preferred) OR on a flash drive to the registration desk.

Items Judged

Production

!Photographic Technology

KANSAS Digital Submission Due Date: 11:59 PM CST on March 15th

Upload Portfolio as per guidelines in Event Guide

Theme: Challenges - personal, school, family, friends, etc.

%Kansas Quirk:

SEMI-FINALISTS will pick up the specific timeline and procedures for the Rotation Stations and Twenty-Four (24) Hour Independent Skills Challenge Day 1 of the Conference beginning at 10:00am.

Items Judged

Photographic Portfolio
Photographic Station Challenge (includes 5-minute Interview)
Twenty-Four (24) Hour Independent Skills Challenge

Prepared Presentation*

%Kansas Quirk:

Contestants will have Twenty-Four (24) Hour to prepare their presentation. The specific timeline and procedures will be picked up the Conference beginning at 10:00am.

Items Judged

Presentation
Stage Presence
Organization

Promotional Design*

Design Challenge: Your school is hosting a student organization fair to promote clubs and activities. You have the responsibility of developing promotional materials to hand out to students at the fair who are interested in joining the TSA chapter. All items are to be placed into a two-pocket folder. All student and school names must be fictitious.

Items Judged

Promotional Folder Cover
Promotional Folder Contents
Semifinal Problem

!Scientific Visualization (SciVis)

KANSAS Digital Submission Due Date: 11:59 PM CST on March 15th

Submit Visualization link in the Portfolio

Items Judged

Documentation Portfolio
Visualization
Semifinalist Interview

Software Development

Live Demonstration of the Software.

Items Judged

Documentation
Software Design
Presentation

Structural Design and Engineering

Develop a design for a railroad **Trestle Bridge** that spans a canyon that has a river running through it.

Click [here](#) for the problem statement.

Click [here](#) for the HS Structural Team Verification

Click [here](#) for Analysis and Assessment [Form](#)

UPDATE: Problem Statement, page 4 should read:

Testing

6. Each bottom end (foot) of the structure must be a minimum of 1 1/2" long (See Figure 1).

Items Judged

Pre-Built Structure
Onsite Structure

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System Control Technology*

%Kansas Quirk: Exit interviews may be utilized in lieu of formal scheduled interviews

Items Judged

Inventor's Log
Solution to Problem
Programming Structure

Technology Bowl

The team of 3 students who take the written tests **MUST** be the same 3 students who compete in the oral rounds.

%Kansas Quirk: Test is completed online Day 1 of the Kansas State Conference.

Items Judged

Written Test (averaged)
Oral Competition

Technology Problem Solving

%Kansas Quirk: Kansas TSA commonly provides the materials to be used for the solution of the problem. Notice will be sent out prior to the Conference detailing what supplies, if any need to be brought.

All toolbox tools listed in the event guide should be brought.

Items Judged

Testing of Solution

!Transportation Modeling

KANSAS Digital Submission Due Date: 11:59 PM CST on March 15th

Include Images of Model, and Display in Portfolio

Theme: History of package or product delivery vehicles

Items Judged

Model and Display
Documentation Portfolio

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!Video Game Design*

KANSAS Digital Submission Due Date: 11:59 PM CST on March 15th

Upload Portfolio with Game Link as per guidelines in Event Guide

Theme: An arcade game for a museum.

Refer to section “F” in General Rules and Regulations.

Note: The URL must point to the team’s entry. Entries that require a software download, running an executable file (.exe), or a request that access be granted will not be judged.

Items Judged

Game Design

Documentation Portfolio

Semi-Finalist Interview

!Webmaster

KANSAS Digital Submission Due Date: 11:59 PM CST on March 15th

Upload PDF with Link to Website as per guidelines in Event Guide

Theme: A virtual event

Context: Due to the global pandemic, in-person events have not been held as in the past. Instead of canceling or postponing events, many organizers chose to hold them virtually. These virtual events had to be interactive and provide participants similar experiences as in-person events.

Challenge: Create a fictitious virtual event and design an accompanying website. The website should identify the type of event, serve as an information guide, and include the virtual experiences related to the event. Sections of the site may include photos, product descriptions, renderings history, contact, and news updates. Present an overview of event details as if you were a consumer.

Items Judged

Website

Semi-Finalist Interview