



NJ TSA Design Problems High School State Conference 2011

Several TSA events require solutions to specific design problems, which are developed and published by individual states. The following are New Jersey's design problems for the 2011 State Conference to be held at The College of New Jersey on April 6, 2011. Please refer to the NJ High School Supplement for additional competition themes and requirements.

Career Comparisons

[Click here for Job Application](#)

Computer-Aided Design (CAD), 2D, Architecture

Design Problem:

More than 1,000 high schools participate in TSA. Approximately 50% of the high school level competitive events are communication related, yet many schools do not have technology education facilities specifically designed for these activities.

Design Brief

Design a 21st century communication technology lab that can serve as a model for high schools interested in offering classes that focus on TSA communication events. Include areas for speaking events, sketching, CAD, graphics/desktop publishing, video production, music production, video game design and web site development.

The facility should be designed for 20 - 24 students and have 2000 - 2400 square feet of instructional space. Additional space may be allocated for storage, teacher office and restrooms (optional). The facility should have two doors and one exterior wall with windows. One door should lead to the exterior and the other to the school hallway.

Specifications/Drawing Requirements:

- A floor plan with dimensions
- Appropriate labeling of each instructional area
- A pictorial showing the specific area designed for one the competitive events
- Any additional views or renderings that will enhance the presentation
- The lab design should be original and creative
- Maximum paper size is 24" x 36" or smaller sheets mounted on a 24" x 36" sheet with no overlapping papers.

Computer-Aided Design (CAD), 3D, Engineering

Design Problem:

Nearly 2 billion people live in developing countries and do not have access to electricity. This situation makes it difficult for many children to safely venture outside their homes or read after dark. They need access to an affordable and reliable lighting source.

Design Brief

Design a rechargeable solar/LED light that can be used as flashlight and as a desk lamp. The light should be functional, attractive and easy to convert from one kind of light to the other. Like a Transformer toy, the same parts should be used for each configuration.

Specifications/Drawing Requirements:

- The light should have one or more LED's and be powered by 2 rechargeable AA batteries
- Drawings should identify how the device converts from one kind of light to the other
- Include any additional views or renderings that will enhance the presentation
- The design should be original and creative
- Maximum paper size is 24" x 36" or smaller sheets mounted on a 24" x 36" sheet with no overlapping papers.

System Control Technology

Design Problem:

Violet Flowers owns a nursery that grows and sells prize winning orchids. Orchids are difficult to grow and it's important that they do not receive too much or too little water. Each Flower Farm orchid is grown in an individual pot.

Design Brief

Design and build a working model of a system that will deliver exactly 3 ounces of water to an individual plant at 7:00 am every day.