Applied Engineering Contest

Purpose

The contest will develop the team skills needed to safely design, document, plan, present, and construct a solution to the engineering problem unveiled to the team during competition.

Clothing Requirement

For men and women:

- Official khaki work shirt and pants
- Black or brown leather work shoes
- Safety glasses with side shields or goggles (prescription glasses can be used if they are equipped with side shields; if not, they must be covered with goggles).

Equipment and Materials

1. Supplied by the technical committee:
    a. Team workspace
    b. All necessary building supplies/parts
    c. Inventory list with associated costs
    d. Robotic work cells
    e. Drills
    f. Power tools
    g. Hand tools
    h. Design problem
2. Supplied by contestants:
    a. Pencils and set of 12 map colors
    b. Measuring tape
    c. 12” ruler with both English and metric markings
    d. Protractor/compass
    e. Blank paper
    f. Grid paper
    g. 1 – 1 ½ “ SkillsUSA 3-ring binder
    h. Safety glasses (1 per team member)
    i. Work gloves
    j. Basic non-programmable scientific calculator

Scope of Contest

1. Teams will be given an applied engineering problem that must be completed to given specifications. Each team will, using sound engineering concepts and problem solving processes, develop, document, present, and execute a plan of action.
    a. Contestants will come up with a plan of action that will include materials needed & costs, schematic/blue prints, order of assembly, theory/math concepts, and safety

concerns. The contestant teams will present orally with supporting documentation, to the judges, their plan of action for approval. **No actual construction will begin until the team's plan has been approved.**

b. Proto-types and other various experiments may be conducted as long as the documentation/presentation process as described in section 1.a has been done first. A new plan of action may then be developed and presented as with the before mentioned process once the results are discovered. This process may be repeated as often as needed.

c. Part of the grading process will be based on how close the final completed project matches the group's documentation and plans. Therefore, a history of lessons learned and design evolution must be included in each team's documentation and any major changes to the team's plan of action documented and approved by judges before work may be accomplished.

d. Judges approval DOES NOT MEAN THAT A TEAM'S DESIGN PLAN WILL WORK AS PRESENTED. Approval only means that the plan is basically sound, safe, and meets basic requirements to start building. If the plan is not approved, judges will state what is missing but will not suggest how to nor help with fixing the team's plan of action.

e. As work begins and safety problems are identified, no points will be deducted from the individual team's scores, as long as the team safety observer catches the safety problem BEFORE it occurs and DOCUMENTS the problem in the team's project documentation.

2. A written theory test will be given to each team member to take individually. The score of each individual member's test grade will be averaged together for the team score. The 30 minute timed test will be given once the competition begins. Subject areas that can be tested are:
    a. Ohms/Kirchhoff's Laws
    b. Power Law
    c. Metric Prefixes
    d. Various technical math problems that are algebra/trigonometry based
    e. Basic safety concepts
    f. Basic robotic terms and definitions; non-equipment specific
    g. Various laws of physics
3. Each team member will present a resume and cover letter to the judging committee; the resume and cover letter will be based on the templates as provided in these contest rules and should be tailored to demonstrate the individual's qualifications appropriate to the job posting provided in this documentation. The templates are not meant to endorse a specific style preferred by industry, but to provide a standardized format. While the format given is to be followed, any font style may be used. The resume and cover letter are to be written for the job posting provided as part of this documentation. Each cover letter should provide a brief description of the main duties within the position being applied for plus the job title and the name of the company.

Logistical Notes for Sponsors

1. Contest check-in will begin at 8:30 the morning of the contest. Consult your district schedule for specific contest date(s) and location(s). All contestants should be checked in and seated with their team by 9:00 am.
2. Unless your district has specifically expressed it will provide lunch for students the day of the contest, please plan to deliver lunch for your team(s) registered in the contest by 12 noon the day of the contest.
3. Contest instructions will begin promptly at 9:00 am with the knowledge test immediately following.
4. After the knowledge test, the contest phase will begin in which teams will have six (6) hours to complete the design, presentation, construction, and testing of their solution to the contest challenge.
5. An exhibition and judging will immediately follow the contest phase. Each team will be provided an equal amount of time to demonstrate their solution for final judging.

Your Name

Telephone | Email address | Street Address, City, ST Zip Code

Date

Recipient Name
Title
Company
Address
City, ST Zip Code

Dear Recipient:
I am interested in the Coordinator position advertised on XYZ. My resume is enclosed for your review. Given my related experience and excellent capabilities, I would appreciate your consideration for this job opening. My skills are an ideal match for this position.

Your Requirements:

- Responsible for evening operations in Student Center and other facilities, including managing registration, solving customer problems, dealing with risk management and emergencies, enforcement of department policies.
- Assists with hiring, training, and management of staff. Coordinate statistics and inventory.
- Experience in the supervision of student staff and strong interpersonal skills are also preferred.
- Valid Minnesota driver's license with good driving record. Ability to travel to different sites required.
- Experience in collegiate programming and management.

My Qualifications:

- Register students for courses, design and manage program software, solve customer problems, enforce department policies, and serve as a contact for students, faculty, and staff.
- Hiring, training, scheduling and management of staff, managing supply inventory, and ordering.
- Minnesota driver's license with NTSA defensive driving certification.
- Extensive experience in collegiate programming and management.
- Excellent interpersonal and communication skills.

I appreciate your taking the time to review my credentials and experience. Again, thank you for your consideration.

Sincerely,

Your Signature (for hard copy letter)

Your Typed Name

Your Name

Telephone | Email address | Street Address, City, ST Zip Code

Objective

Include a brief paragraph describing the ideal industry and position in which you would like to be working.

Skills & Abilities

Include a description of list of specific/specialized skills you possess. You might want to include a brief summary of certifications and professional skills.

Experience

Company Name, Location *Dates From–To*

This is the place for a brief summary of your key responsibilities and accomplishments.

Company Name, Location *Dates From–To*

This is the place for a brief summary of your key responsibilities and accomplishments.

Education

School name, Location, Degree *Years From–To*

You might want to include your GPA here and a brief summary of relevant coursework, awards, and honors received.

Leadership

Include a description or list of any organizations in which you hold a leadership position. List each leadership activity and briefly describe the associated responsibilities.

Awards and Honors

Title of Award or Honor, Associated Organization Date Received

Title of Award or Honor, Associated Organization Date Received

References available upon request

Job Posting
Student Technician I

General Summary:
As a Student Technician I, you will make a difference to the organization by assisting in the maintenance of the campus ground and facilities. In this role, you will apply technical skills related to painting, construction, yardwork, light mechanical duties, and other functional areas that will positively impact the organization's mission and goals.

Minimum Qualifications:
- High School Diploma or GED
- Valid driver's license
  Completion of OSHA 10-hour certification
- Preferred applicants will have some professional experience in a maintenance or yardwork capacity

Physical Requirements:
Must be able to safely lift and move 20 lbs.

Knowledge Skills and Abilities:
Must possess good oral and written communication skills and organizational skills. Must possess problem solving skills and knowledge of engineering design processes for development and construction of solutions to address specific organizational challenges.

Essential Duties:

Facilities Maintenance and Upkeep – 30%
Mowing, weed-eating, edging, using a blower. Light building repair, painting, touch-ups.

Classroom Set-up – 20%
Set up classrooms, pack/unpack trailers, set-up road blockades and placement of road signs.

Vehicle Service – 10%
Repair requests, schedule oil changes, keep inspections up to date.

Special Assignments – 40%
Computer updates, Equipment and purchasing research, special projects as related to organizational challenges.