DESIGN REVIEW PREPARATION IDEAS FOR RESCUE ROBOTICS WORKSHOPS
Fall 2018

1. Describe physical layout of the OC Fairgrounds.
    a. A table for each team. Bring the robot.
    b. A computer and monitor will be provided on a cart.
    c. Bring your own laptop with the presentation on it!
    d. Bring another copy to use on the provided computer if needed.
2. Judges are grad students in mechanical/aeronautical engineering, so they understand the robot.
3. Design Review is a combination of a job interview and an appearance on Shark Tank. Based on Nebraska/Imagine Cup/Rescue Robotics, I have decided the judges are looking for these things:

General Impression of the vehicle. Does it look professional or very crude?	Can I make money and produce this device?
Assess the team's engineering skills, critical thinking, and problem-solving **process**.	Do they know what they are doing? How do they come across? Easy to work with or arrogant and controlling.
How successful will team be in competition given all they have seen and heard.	Do I want to work with them?

3. Dress the part. Leave the judges with the impression that you have taken this seriously.
4. Have someone introduce the team and welcome judges.
    a. Give a quick overview and what school they are from.
    b. Take your time.
    c. I would give the judges a handout with the school name team members, and a summary of their goals and what they expect the robot to do.
    d. Include a bullet list of the major components so they can have it when they are voting.
5. Use the slide show to give an overview of the major systems. Have each person speak about their role for about 1 minute.
    a. Do not read the slides.
    b. Talk slowly and clearly.
6. When they ask questions:
    a. Do not guess/lie/make up stuff!
    b. If you don't know just say so or turn to another team member who does.

c. Be sure to give data/numbers to the questions. Never say better than, about the same, etc.
d. They are listening for the teams thought processes as it relates to problem-solving.

7. Have a specific problem in mind that they solved to explain to the judges. If they ask about the navigation system:
    a. **Explain the problem of driving straight.** First you measured how much the bot drifted and the percentage of failure.
    b. You discovered PID and give super brief explanation of what that does. You can then say, "while that helped in speed control it still drifted x amount and x% of the time".
    c. You then discovered Motor Synching in RobotC and that really helped. Now the bot can go 20ft and only drift 5-8cm 92% of the time.
    d. **With regards to the battery**, determine how much current the entire system consumes and describe how your trade analysis made you decide n the one you purchased. It should be around 25-30% more than your expected maximum energy needs.
    e. Also tell them how you determined how long the bot can run on the battery because it must run for around 15 min./heat. You have spare batteries for the next heat.
    f. Be prepared to describe WHY you chose the GPS/SONAR/CAMERA you did from an engineering perspective!
    g. ALWAYS USE NUMBERS. A FEW CHARTS ON THE SLIDES WOULD BE REALLY IMPRESSIVE.
        i. I would show a screen shot of the PID readings or the Sonar readings. This shows you know how to gather precise data and make decisions based on those findings.

8. **WHAT NOT TO DO:**
    a. When they suggest ideas for improvement, ALWAYS thank them for that idea and tell someone on the team to write that down so you can explore it further.
    b. Never act like you know more than the judges. You never act arrogant or act like you know everything.
    c. When you don't know something, say so! Never guess or pretend!!

GETTING STARTED TEAM MEETINGS

9. Weeks 1 & 2:
    a. Describe the competition and layout of the field and pit area.
    b. Assign team members to explore strategies for finding victims.
    c. Have someone start evaluating the types of vehicles that might work in the competition. (2WD, 4WD, Etc.)

d. Try to give them a budget amount to stay within. This is exactly what they will experience in industry.

10. Week 3:
    a. Begin the discussion about sensors and how they might combine them into a working system.
11. At some point build the vehicle and be sure to have them test each sub-system.
12. Make them do status reports each week:
    a. Have them describe what they did and the status of each action item.
    b. What is the plan for the coming week.
13. Have someone start working on the slide presentation and begin looking at the design review packet. Someone needs to be responsible for maintaining this and updating as they get info from the status reports.