Robotics Badge Requirements

Skill Builders

1. Find out the importance of gears and sprockets. Where do you see them in everyday life? What ratios produce which effects in relation to speed or torque?
2. Learn about different drive systems. You may be familiar with 2 or 4 wheel drive as seen in cars, trucks, or off-road vehicles; but what is an omni-drive system? What about tank-drive versus steered wheels?
3. Investigate the importance of programming. Write your own "program" instructing a friend to accomplish a simple task. Have her follow it word for word, detail for detail. How many rewritings does it take the "program" to be perfect?
4. Observe automated objects found in your house. With a parent's help, look inside and find out how it works. You can try to find out what keeps a washing machine running, how a printer or fax machine receives signals, or even what it takes to make a car run.
5. Find a problem in your house and design a robot to fix the problem. How would you build it? What would you use? Can it complete multiple jobs?
6. Build a robotic mechanism. You can use K'NEX pieces, erector sets, or whatever you can find to create the mechanism. What will it do? How will it accomplish its task?

Technology

1. Research two current robots making a difference in today's world. What are they programmed to do? How long did it take to build? Were there any setbacks? How long have they been making a difference?
2. Find national robotics programs that promote engineering and robotics at the high school level. How do they create a positive learning experience? By what means are they promoting themselves? Are they successful in their goals?
3. Research the computer technology of the past. How has the change from past to present enabled robots to be seen in everyday life? Can you think of a technology improvement that will allow a similar leap in robotic capability for the future? Design a better form of an already existing robot.
4. Research technology that is "out of this world." Investigate a robot working in space. What is its purpose? What kinds of problems were encountered along the way? Did it accomplish what it set out to do?

Service Project

1. Put on or be part of a Science Fair. Promote the importance of science and engineering, or its presence in everyday life to younger girls and boys in your community. Build booths that interest and intrigue visitors.
2. Start your own robotics team in your school or community and compete. Lead the way and show other scouts the excitement and thrill of competition. Teach your troop or friends about the competition and organization. What is their message? How does it apply to everyday life? What is the program you participated in? How has this changed your view on "competitive fun"?
3. Visit a younger troop and give a presentation including a demonstration about what you have learned about the requirements for the field of robotics.
4. Find a local robotics competition and volunteer your time to help keep the event running as smooth as possible. Check the organizations website to see when a competition is happening in your area and what you can do to help.

Career Exploration

1. Go to a robotics competition and talk to the sponsors or mentors to find out what they do. Why are they involved in the competition?
2. Tour a Science/Robotics based company like the Jet Propulsion Laboratory, or a NASA center. Find out about their latest projects, and what types of different careers it takes to complete a project. If you cannot arrange a tour, check their website to find out what their careers are all about.

3. Investigate two women engineers who have made a difference in the science or engineering world. What did they have to do to get to where they are? What did they do to impact the community and how does it affect you?
4. Research the different disciplines that can lead to a career in robotics. Contact your school career counselor or a college robotics department to learn more about the academic paths to becoming a roboticist.