

**4-H Engineering Design Challenge Volunteer/Coach Position Description**

- Purpose:** To encourage youth to engage in critical thinking, creativity, problem solving in a non-traditional learning environment while having fun in the process. Guide youth in inventing a complex contraption to complete a simple task.
- Benefits of Position:** Fun of working with 4-H members, parents/caregivers, and other leaders.  
An opportunity to learn leadership, organizational, communication, and conflict management skills.  
Satisfaction of significant contribution to growth of 4-H youth.  
Satisfaction of working as a team to reach goals.  
Respect and gratitude of parents/caregivers and community.  
Recognition of accomplishments by unit and county.
- Major Goals:** Guide a team of 2-10 youth to help them create a complex contraption to complete a simple task, eg. water a plant.  
Make sure the team meets periodically to practice and build various designs and to keep a record of progress in their team journal.  
Review the rules for the competition and ensure they are followed.  
Make sure the team is registered for county and state events on time.  
Help youth problem solve, generate ideas, test and redesign as needed.  
Attend NDSU Extension 4-H volunteer trainings related to role.  
Assure safety of all participants.  
Communicate effectively with parents/caregivers.
- Skills needed:** Communication, ability to organize and delegate, interest in youth, adults, community, ability to provide a positive role model for youth.  
Enthusiasm for supporting youth in problem solving, critical thinking, communication and collaboration  
Ability to communicate effectively with youth and adults  
Commitment to ND 4-H program mission and core values  
Time management skills  
Able to drive to events
- Time involved:** Suggested to meet at least three times before the competitive event. However, it will take more than three meetings to complete the machine.  
Suggesting meeting time: 2 hours per time  
Competitive Event: 4-5 hours
- Training:** Attend basic 4-H Volunteer Orientation / Youth Protection Training. Use 4-H Volunteer Handbook (contact local 4-H agent for more information).

## 4-H Engineering Design Challenge Volunteer/Coach Position Description

**Office** Agent counseling, referrals, project and club materials, audiovisuals, newsletters

**Privileges:**

**Resources:** [4-H Rube Goldberg Website:](#)

- Rube Goldberg Handbook
- Simple Machine Lessons
- Transfers of Energy Lessons

Web:

- Intro to simple machines: [https://www.teachengineering.org/lessons/view/cub\\_simple\\_lesson01](https://www.teachengineering.org/lessons/view/cub_simple_lesson01) (be sure to check out student worksheets)
- Lesson: Pyramid Building: How to Use a Wedge: [https://www.teachengineering.org/lessons/view/cub\\_simple\\_lesson02](https://www.teachengineering.org/lessons/view/cub_simple_lesson02)
- Lesson: Let's Move It! (wheels, axles and levers): [https://www.teachengineering.org/lessons/view/cub\\_simple\\_lesson03](https://www.teachengineering.org/lessons/view/cub_simple_lesson03)
- Lesson: Slide Right on By Using an Inclined Plane: [https://www.teachengineering.org/lessons/view/cub\\_simple\\_lesson04](https://www.teachengineering.org/lessons/view/cub_simple_lesson04)

Videos for examples. After watching videos, ask youth what simple machines they noticed in the videos. What types of simple tasks did each Rube Goldberg machine accomplish? Youth should record their observations in their journal. When they finish their journal, they may turn to a partner and compare observations in a brief discussion.

Potential Video Examples:

<https://www.youtube.com/watch?v=GOMIBdM6N7Q&feature=youtu.be>  
<https://www.youtube.com/watch?v=qybUFnY7Y8w&feature=youtu.be>  
<https://www.youtube.com/watch?v=cv5WLLYo-fk&feature=youtu.be>  
<https://youtu.be/ORYI-AgS6No?feature=shared>

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**Accountable to:** \_\_\_\_\_ (local 4-H agent)

**Signed:** \_\_\_\_\_ **Date:** \_\_\_\_\_

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