# GEOSPATIAL

## GEOSPATIAL GUIDELINES
- STEM Geospatial is a diverse category that includes a variety of exhibits 4-H Members can get involved in. Through participation in this category, 4-H Members will gain more knowledge about Nebraska's rich history and diverse geography. Take close note of the rules to ensure your exhibit qualifies.
- The name and county of each exhibitor should appear separately on the back of each board, poster or article, and on the front cover of notebooks so owner of the exhibit may be identified if the entry tag is separated from the exhibit.
- Reports should be written using the scientific method whenever possible (Background; Question or Hypothesis; What you plan to do and What you did; Method Used and Observations; Results and What you learned). All reports should be computer generated and enclosed in a clear plastic cover. The reports should be attached securely to the display.
- Please refer to the General Rules for the policy regarding firearms, items with a blade, and other related items.
- Please refer to the General Rules for the policy regarding the use of copywritten images.
- Scoresheets, forms, contest study materials, and additional resources can be found at https://go.unl.edu/ne4hgeo
- Educational resources can be found at: https://4hcurriculum.unl.edu/index.php/main/program_project/132

## DEPT. H / DIV. 880
## GEOSPATIAL
*[Scoresheets SF299-303]*
Class 1   Poster *[SF299]*: Create a poster (not to exceed 14"x22") communicating a GPS theme such as How GPS or GIS works; Careers that use GPS or GIS; How to use GPS; What is GIS; GPS or GIS in Agriculture; Precision Agriculture; or a geospatial topic of interest.

Class 2   4-H Favorite Places or Historical Site Poster *[SF299]*: The 4-H exhibitor identifies a favorite place or historical site (including grave sites) in Nebraska. Exhibit should include latitude and longitude, digital picture, and local area map. Poster size should not exceed 14" x 22".

Class 3   GPS Notebook *[SF300]*: Keep a log of at least 5 places visited using a GPS enabled device. At least one site should be from a community other than where you live. For each site, record the latitude, longitude, and elevation. Also include a description of the site, a paragraph explaining what was interesting about the site or finding it. Photos of each site and/or cache are optional but encouraged.

Class 4   Geocache *[SF301]*: Assemble a themed geocache. **Physical geocache is REQUIRED with exhibit.** Each geocache should be a watertight container. It should include a log book and pencil for finders to log their visits and may include small trinket, geocoins, etc. for the finders to trade. Documentation should include a title, teaser description, and the geographic coordinates of intended placement. *Register the site at geocaching.com and include a print-out of its registry.* The entry may include a photograph of the cache in its intended hiding place.

Class 5   Agriculture Precision Mapping *[SF302]*: 4-H Members will assemble a notebook that will include a minimum of 2 digital copies of various data layers that can be used in precision agriculture to identify spatial patterns and/or correlations (printed copies of websites where applications can be purchased is acceptable). A report of how the analysis of the various data will be used to make a management decision.

Class 6   4-H History Map/Preserve 4-H History *[SF303]*: Nominate a Point of Interest for the 4-H History Map Project. Include copy of submitted form in folder or notebook. Write a brief description of historical significance of 4-H place or person. (a minimum of one paragraph).

- To nominate a site for the 4-H history map please go to http://arcg.is/1bvGogV
- For more information about 4-H history go to http://www.4-hhistorypreservation.com/History_Map
- For a step-by-step video on nominating a point, please go to this link: http://tinyurl.com/nominate4h

Class 7   GIS Thematic Map *[SF302]*: Using any GIS software, create a thematic map. Thematic maps can utilize any subject of interest to the 4-H Member. Example map would be Amelia Earhart's or Sir Francis Drake's voyage, population density maps, water usage maps, or 4-H project in Nebraska. Create GIS Map using data from books and/or internet. Use reliable data (i.e. U.S. Center or U.S. Census Bureau, etc). Map any size from 8.5" x 11" up to 24" x 36", which should include Title, Base Map, Neat Line, North Arrow, and Legend. Identify the source of your information on the back of the map.

Class 8   Virtual Geocache *[SF300]*: Keep a log of at least 5 places visited using a virtual geocache platform. At least one site should be from a community other than where you live. For each site, record the latitude, longitude, and elevation. Also include a description of the site, a paragraph explaining what was interesting about the site or finding it. Photos of each site and/or cache are optional, but highly encouraged.

# ROBOTICS

## ROBOTICS GUIDELINES
- Discover the design and functions of robotic arms; Build a robotic arm that moves; Explore robot movement, power transfer, and locomotion; Design and build machines that roll, slide, draw, or move underwater; Make the connection between the mechanical and electronic elements of robots; Explore sensors, write programs, build circuits and design your own robot; Use commercial robotics kits to explore the world of robotics; Learn to program your robot using sensors, loops, and conditional statements.
- This category involves the many different aspects of Robotics. Participants will learn more about how robots are designed and developed as well as the mechanical and electronic elements of robots. Involvement in STEM Robotics gives participants a first-hand experience in modern technology.
- The name and county of each exhibitor should appear separately on the back of each board, poster or article and on the front cover of notebooks so the exhibitor may be identified if the entry tag is separated from the exhibit.
- Reports should be written using the scientific method whenever possible (Background; Question or Hypothesis; What you plan to do and What you did; Method Used and Observations; Results and What you learned). All reports should be computer generated and enclosed in a clear plastic cover. The reports should be attached securely to the display.
- Posters can be any size up to 22" x 28" when ready for display. Example: tri-fold poster boards are not to exceed 22" x 28" when fully open for display.
- Scoresheets, forms, contest study materials, and additional resources can be found at http://go.unl.edu/ne4hrobotics
- Educational resources can be found at: https://4hcurriculum.unl.edu/index.php/main/program_project/136

## DEPT. H / DIV. 861
## ROBOTICS
**GENERAL INFO** *[Scoresheets SF236-237, SF239, SF241, SF243-244]*:
- Youth enrolled in Virtual Robotics, Junk Drawer Robotics (Levels 1, 2, or 3), or Robotics Platforms may exhibit in any class within this division.