

DEPARTMENT H – SCIENCE, ENGINEERING & TECHNOLOGY COMPUTERS/GPS/ROBOTICS

Sarpy County Fair Co-Superintendents:

Deb Albright

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4-H Staff Person Responsible – John Kilpatrick

General Information:

Premiums for Technology Exhibits are paid at level 5

Department H – Science, Engineering & Technology Division 860 - Computers

COMPUTER MYSTERIES – UNIT 2

CLASS 1 COMPUTER APPLICATION DEMONSTRATION

4-H exhibitor demonstrates how to accomplish a task using a computer application software such as a spreadsheet, database, publishing, graphic design, accounting or precision farming program. This exhibit consists of a notebook (8.5x11 inches) which should include a (1) cover page, (2) a detailed report describing: (a) the task to be completed, (b) the computer application software required to complete the task, (c) specific features of the computer application software necessary for completing the task and (d) other tasks that can be accomplished using the computer application software and (3) print out of your project. Examples: design a logo for your school; enhance a digital image for a newspaper story; manage a checking account; create a poster to publicize an event; or to design scrapbook pages, or other.

CLASS 2 PRODUCE A COMPUTER SLIDESHOW PRESENTATION

Using presentation software like Microsoft PowerPoint and following the *Checklist for Creating Your Next PowerPoint Presentation* located at <http://cit.information.unl.edu/info0806.htm> the 4-H exhibitor develops a slideshow about a topic related to youth. The slideshow should include a minimum of 10 slides and no more than 25. Incorporate appropriate slide layouts, graphics and animations. Each slide should include notes for a presenter. The exhibit includes a copy of the presentation saved to a CD-ROM along with a printout of the notes pages in a clear plastic cover. Slide presentation should relate to one topic.

CLASS 3 TEACH AN ADULT

The 4-H exhibitor writes a report between 1 and 3 pages describing a situation in which he or she has taught an adult(s) a computer skill. The report should include pictures of the 4-H'er working with the adult(s). The report should be in a clear plastic cover.

COMPUTER MYSTERIES – UNIT 3

CLASS 5 PRODUCE AN AUDIO/VIDEO COMPUTER PRESENTATION

Using presentation software a 4-H exhibitor designs a multimedia computer presentation on one topic related to youth. The presentation should be at least 2 minutes in length and no more than 5 minutes in length, appropriate graphics, sound and either a video clip, animation or voice over and/or original video clip. The presentation must be able to be played and viewed on a PC using Windows Media Player, Real Player, iTunes or QuickTime Player.

CLASS 6 BUILD A WEB SITE

Design a simple Web site for providing information about a topic related to youth using multiple computer application software programs such as an HTML editor like Microsoft's FrontPage or Macromedia's Dreamweaver, and image editor like IrfanView or GIMP. All files comprising the Web site should be included on a CD-ROM and able to be viewed using both Internet Explorer and Mozilla. Exhibit CD in a plastic case.

CLASS 7 BUILD YOUR OWN COMPUTER (one component only)

Exhibit will be a notebook (8.5x11 inches) that includes a (1) cover page, (2) detailed report (2-3 pages) describing a specific computer component, (a) describe the component's purpose (b) how it is used, (c) the location (d) why components were chosen (e) cost of component from more than one source, and (3) pictures and supporting materials.

CLASS 8 WRITE A SOFTWARE PROGRAM

This project allows a 4-H'er to demonstrate his or her skills in writing a computer program using a common programming language. The program must demonstrate the use of data files and subroutines. It should demonstrate a high degree of organization and quality suitable for distribution to the general public. This exhibit consists of a notebook (8.5x11) which should include these parts: (1) a cover page, (2) a report including: (a) what the software can do, (b) why you wrote the software, (c) what features are included in the software, (d) how you will use the program in the future, (3) a flow chart in block diagram form, and (4) an example of input and output.

*** FOLLOWING CLASSES ARE NOT ELIGIBLE FOR STATE FAIR CONSIDERATION***

CLASS 903* COMMERCIAL SOFTWARE UTILIZATION

Exhibit will be notebook of the documentation and print-outs using each section of the commercial program (i.e. Microsoft Works; Word processor, Database, Spreadsheet). The notebook will consist of the following areas: 1) cover page, 2)

print-outs of each of the sections offered by the software and 3) a paragraph explaining how each section can be used.

CLASS 904* BOOTING UP UNIT 1

Create a poster on a lesson learned in unit 1. Examples might include: hardware, software programs, how to take care of a computer and operating systems.

CLASS 905* COMPUTER ART POSTER (BLACK & WHITE)

Exhibit should be created on at least an 8 ½" x 11" page using a commercially available graphics software package and a single color printer/plotter. Posters shall be mounted on a 14" x 22" poster either in vertical or horizontal arrangement. No theme required.

CLASS 906* COMPUTER ART POSTER (COLOR)

Exhibit should be created on at least an 8 ½" x 11" page using a commercially available graphics software package and color printer/plotter. Posters shall be mounted on a 14" x 22" poster either in vertical or horizontal arrangement. No theme required.

CLASS 907* COMPUTER DESIGNED GREETING CARD

Exhibit will consist of six (6) greeting cards, each for a different occasion/holiday. Cards should be created on an 8 ½ x 11" page using commercially available graphics program and either single color or color printer/plotter. The cards should vary in folds and design. Tell which software program was used. Prefabricated cards from commercially available card programs will NOT be accepted. No theme required. Put cards in some type of protective cover.

CLASS 908* 4-H PROMOTIONAL FLIER

Exhibit should be created on 8 ½ x 11" page using a commercially available software package. Flier can be color or black & white. Fliers can be a whole page or a folded flier. Put exhibit in protective cover.

CLASS 912* INTERNET EXPLORATION

Exhibit will be a notebook consisting of the following: 1) print-out of five (5) web sites, 2) what you liked and did not like about each site and 3) how you will use the Internet in the future.

CLASS 914* UTILIZING THE INTERNET

Exhibit will be a notebook of web sites used to plan a real or fictitious vacation. Notebook will consist of at least four different web sites illustrating the following: 1) airfare and/or directions to drive to destination, 2) hotels/motels in the area, 3) things to do (i.e. baseball game, Disney World, amusement park) and 4) a maximum one- page text telling the steps taken to plan the vacation. List web sites for each site and tell how you may be able to use the web to plan or research other things in the future.

CLASS 915* INTERNET WEB SITE CREATION

Exhibit will be a notebook of the documentation and print-out of the web site. The notebook should include: 1) cover page, 2) print-out of the web site, 3) summary page, including goals of the page, purpose, steps taken to create the page and intended audience and 4) completed general record book.

CLASS 916* POWER POINT (OR SIMILAR PROGRAM) PRESENTATION

Exhibit will be a notebook of the print-outs using the program. Create at least ten (10) different slides using a minimum of four layouts with the same background on all slides. The notebook will consist of the following: 1) cover page, 2) print-outs of the program created, 3) description of the different features used in the program and 4) how you plan to use this program in the future.

Department H – Science, Engineering & Technology
Division 861 - Robotics

ROBOTICS - ROBOTIC EXPLORER - UNIT 1

CLASS 1 ROBOT OR NOT POSTER

Create a poster (14" X 22") demonstrating how to determine whether an object is a machine, a computer or a robot. Poster should include at least 2 - 4 objects.

CLASS 2 PSEUDO CODE DISPLAY POSTER

Poster (14" X 22") should display the pseudo code written for the robot to perform at least four functions and utilize at least two modifiers. Include the pseudo code, and a written description of the icon functions.

CLASS 3 ROBOTICS EXPLORER VIDEO

This class should be displayed in a notebook. The notebook should include a video clip on a CD/DVD that demonstrates the robot performing the programmed function. Include your pseudo code and a written description of the icon functions.

CLASS 4 ROBOTICS EXPLORER INTERVIEW

Interview someone who is working in the field of robotics. Interviews can either be written or in a multimedia format (CD/DVD). Written interviews should be in a notebook. Written reports should be 3 to 5 pages, double spaced, 12 point font, and 1" margins. Multimedia reports should be between 3 to 5 minutes in length.

CLASS 5 CAREERS IN ROBOTICS

Research a career in robotics. Your report can be either written or in a multimedia CD/DVD format. Written reports should be in a notebook. Written reports should be 3 to 5 pages, double spaced, 12 point font, and 1" margins. Multimedia reports should be between 3 to 5 minutes in length.

ROBOTICS - ROBOTIC PROBE - UNIT 2

CLASS 6 ROTATION SENSOR NOTEBOOK

Write pseudo code which includes at least one rotational sensor activity. Include the code written and explain what the code function is and how you would change it to improve either the function or the code.

CLASS 7 ROBOTICS PROBE NOTEBOOK

Youth should follow one of the following activities in the project manual: Go the

Distance, Tighten Your Belts, or Do the Time. Based upon the activity you select, replicate and complete the chart. Your notebook should include the chart and the answer to the following questions: 1. What did you learn about gears and gear ratios? 2. What are the benefits of using belts and pulleys? 3. What is the relationship between gear ratio and speed?

CLASS 8 BUILD A ROBOT (MAY USE KIT)

Include a robot and a notebook which includes any code/pseudo code that you have written for the robot, the robot's purpose, and any challenges or changes you would make in the robot design or programming.

CLASS 9 LIFE SKILLS NOTEBOOK

Using the Life Skills Model (available through your local extension office), develop a notebook that explains which life skills you developed while enrolled in the robotics project and how they will influence you in the future.

Department H – Science, Engineering & Technology Division 880 - GPS

CLASS 1 MAPPING A HISTORICAL SITE WITHIN NEBRASKA POSTER

Using a global positioning system (GPS) device and preprinted map, pinpoint a historical site within Nebraska. Add 1-3 digital images of the historical site to the map and a brief explanation of the image and surrounding area, brief explanation of how photo was taken, camera, etc. . Latitude and Longitude of the site, map datum used, position format used and a brief explanation of why you chose this site. Exhibit will include: 2-4 pg. report on the map itself enclosed in a clear plastic cover attached to poster. The poster size should not exceed 22" X 30".

CLASS 2 MAPPING A HISTORICAL SITE WITHIN NEBRASKA

Using a global positioning system (GPS) device and a geographic information system (GIS) computer software application create a map at least 8 ½" X 11" and no larger than 26" X 24" (plotter map size) GIS map. The historical site must be in Nebraska. Map should include title, base map, neat line, north arrow, and legend. Identify 1-3 points of interest, using a GPS device, collect the GPS data and take a digital image of each point. Place the 1-3 points in the exact location on your map and ensure the GPS data is within the map or the legend. Place the digital images on your map in an appropriate location.

CLASS 3 HAND DRAWN OR PRE-PRINTED HURRICANE TRACKING MAP

Create a hand drawn or pre-printed map of the Atlantic Ocean, the Pacific Ocean or the Gulf of Mexico. Blank hurricane base maps can be downloaded from The National Oceanic and Atmospheric Administration (NOAA) (<http://www.nhc.noaa.gov/>). The tracking maps must have at least 1-5 hurricanes from the same hurricane season or historical hurricane statistics. Each hurricane must be plotted with points showing the location of the storm and connecting lines to show the path of the storm. Plotting points and the line must be the same color. The plotting point will be every 12 or 24 –hour increments

and must be identified with a shape (dot, square, triangle etc.). Hurricane data is located at this youth friendly website <http://www.wunderground.com/tropical/>. Exhibit will be 8.5" X 11" and mounted in a simple picture frame with hardware for hanging.

CLASS 4

GIS HURRICANE TRACKING MAP

Create a GIS map with a geographic information system (GIS) computer software application of the Atlantic Ocean, Pacific Ocean, or the Gulf of Mexico. The map should appear similar to the National Oceanic and Atmospheric Administration (NOAA) (<http://www.nhc.noaa.gov/>). The map should include title, base map, neat line, north arrow, and legend. The tracking map must have 1-5 hurricanes from the same season or historical hurricane statistics. Each hurricane must be plotted with points showing the location of the storm and connecting lines to show the path of the storm. Plotting points and line should identify the category of the Hurricane with the same color. Plotting points should indicate the date, latitude, and longitude of the point. The line should show the wind speed of the storm. The plotting point will be every 12 or 24-hour increments and must be identified with a GIS point shape (dot, square, triangle, etc.). Hurricane data is located at this youth friendly website (<http://www.wunderground.com/tropical/>). Exhibit will be an 8.5" X 11" to the maximum size of 36" X 24" (plotter map size) GIS map. Map can be laminated and should not be placed in picture frame.

CLASS 5

HURRICANE TRACKING POSTER

Exhibit will consist of a poster presentation using the approved National oceanic and Atmospheric Administration (NOAA) hurricane tracking maps. Go to the National Hurricane Center to print a hurricane tracking map at <http://www.nhc.noaa.gov/>. Poster can be of the Eastern Atlantic, the Full Pacific or the Western Atlantic using different colors and different plotting shapes for each hurricane. The plotting point must be identified with a shape (dot, square, triangle, etc) and must be connected by a line showing the progression of the storm. Plot points every 12- 24 hours. Hurricane data can be located at: <http://www.wunderground.com/tropical/>; Include title, name of hurricane, date hurricanes begins and ends, distance traveled, minimum and maximum wind speeds, types of categories and latitude and longitude, etc. Poster size should not exceed 22" X 30".

CLASS 6

4-H YOUTH FAVORITE PLACES

The 4-H exhibitor visits his or her favorite place in Nebraska. Using a Global Positioning Systems (GPS) receiver he/she records the latitude and longitude of his/her favorite place. The exhibitor also takes a digital picture of the favorite place. The exhibitor then uploads the data and picture to the 4-H Youth Favorite Places Web site at <http://www.youthfavoriteplaces.org/index.php>. Up to three sites can be included in the state fair exhibit which is to consist of a folder/notebook explaining the steps involved in entering the data to the 4-H Youth Favorite Places Web site. Fair exhibit will include: A folder/notebook including a report for each site visited and at least one and no more than five digital photos and captions of each site visited. The reports should explain how

the 4-H'er participated in the national 4-H Youth Favorite Places project, recording the information and then uploading it to the Web site. Each report should include (1) the nearest city or town, (2) the county where the site is located, (3) the latitude and longitude of the favorite place, (4) an explanation of why this is their favorite place and why other people should visit the place and (5) a list the steps for entering the data on the Web site for the national project. A printed copy of the Web site posting of each favorite place uploaded should also be included with the report in the folder. **NOTE:** 4-H exhibitor should choose a public location that others can visit; not their personal residence.

CLASS 7

GIS THEMATIC POSTER

Create a thematics poster using pre-printed or hand copies maps on any subject. Examples of Maps might be Emilia Earhart journey, Sir Francis Drake's Voyage, population density maps, water usage maps, and voter poll results, disease outbreaks in animals/humans or 4-H projects in Nebraska. Create a 1-3 page report on why you choose the subject and map(s), how you created the map(s) and the source of your data (use reliable sources such as the US Center for Disease Control or the US Census Bureau). Poster should include a Title and size should not exceed 22" X 30". Place report in plastic cover attached to poster.

CLASS 8

GIS THEMATIC MAP

Using any GIS software, create a thematic map. Thematic maps can utilize any subject of interest to the 4-Her. Maps could be of Amelia Earhart's journey, Sir Francis Drake's voyage, population density maps, water usage maps, or 4-H projects in Nebraska (examples). Create a GIS Map using data from books and/or internet. Use reliable date, ex. U.S. Center for Disease Control or U.S. Census Bureau. Map any size for 8.5" X 11" up to 36" X 24", should include Title, Base map, Neat Line, North Arrow, and Legend. Identify the source of your information on the back of the map.