
Section CB — Computer Science (4H20/10)

Check-in 5:30-7:30 p.m. on Tuesday, August 1, in Cloverleaf Hall

Judged at 9 a.m. on Wednesday, August 2 in Cloverleaf Hall

Member will be present for judging.

Superintendent..... Steve Whaley

More than one class may be entered. Classes are not project book specific. All exhibits must include something visual, such as a printed copy of a digital presentation, which will remain on display during the exhibition. Electronic equipment will only be used during personal judging time and will not remain on display during the entire exhibit period. Conference judging is very important to help our judges discover precisely what each 4-H member learned. Often, being able to demonstrate what was learned is better than having a perfect display.

NOTE: 4-H members that require computers for their display must bring their own computer before 9 a.m. on Wednesday and should remove the computer from the judging area following judging. Someone will monitor exhibitors' computers during judging time. No Internet connectivity will be available, please plan accordingly. Computers left after judging will be taken to the 4-H office.

Classes:

Beginning Visual Programming (50158): Open to youth in Computer Science 1 or Computer Explore. Exhibit a simple program using Scratch (or other simple graphic programming language). The program should include eight different commands including looping and getting input from the keyboard and mouse.

Intermediate Visual Programming (50159) : Open to youth in Computer Science 1 or Computer Explore. Exhibit a program using Scratch (or other simple graphic programming) that has been downloaded from the Internet and modified. Compare the two programs and demonstrate the changes made to the original program; OR create an animated storybook using Scratch (or other simple graphical programming language)

Advanced Visual Programming (50160): Open to youth in Computer Science 1 or Computer Explore. Exhibit a video game created in Scratch (or other simple graphic programming).

Website Design (50161): Open to youth in Computer Explore only. Exhibit an original website that you have designed. Internet access will not be provided, so exhibitors must supply their own internet hot spot or the website must be hosted on the exhibitor's computer).

Open Source Computer Science (50165): Open to youth enrolled in Computer Science 1, Computer Explore, Robotics 1-2, Junk Drawer Robotics 1-3. Exhibits in this class will demonstrate successful application of open source (publicly available) computing software and/or hardware, such as Raspberry Pi and Linux, to accomplish a task. All exhibits must include something visual, such as a poster or printed copy of a digital presentation or programming flowchart, which will remain on display during the exhibition.

Computer Innovation Class (50162): Open to youth who were at least 13 years of age on September 1, 2016 and are enrolled in a computer project. Exhibit an original program using a higher level programming language such as Python, Javascript, C++, etc.

Computer Clover Challenge (50163): See rules on page 76.

Computer Science Ready4Life Challenge (50164): See rules on page 76.

Division— Electricity (4H20/10)

Check-in 5:30-7:30 p.m. on Tuesday, August 1, in Cloverleaf Hall

Judged at 9 a.m. on Wednesday, August 2, Cloverleaf Hall

Member will be present for judging.

Superintendent.....Chris Grotbo

Assistant Superintendents.....Debbie Marquis, Rod Sabick

- A. All exhibits must be constructed by the exhibitor during current 4-H year.
- B. Exhibitors are limited to a maximum of one entry per sub-class and four entries in this section.
- C. A written explanation of project construction and parts list must accompany each exhibit.
- D. Schematic/wiring diagram recommended for all projects.
- E. In order to be State Fair eligible, table displays must be no larger than 2' wide by 15" deep. Projects using paper clips, cardboard, thumbtacks, & brads are not eligible for state fair exhibits.
- F. Please refer to Electricity Supplement Sheet available at Extension office or online for more information about what is expected to meet county guidelines. **See web resources at <http://web.extension.illinois.edu/lmw/mclean4hfair/1100.html>**

Classes:

Electricity 1 (50177)-Exploring the Magic of Electricity:

Sub-Classes:

Simple Switch (size limited to 12"x12")

Simple Motor (coils must be hand wound, no kits)

Magnetic Telegraph/Buzzer Devices (coils must be hand wound, no kits)

Electricity 2 (50178)-Investigation of Electricity:

Sub-Classes:

DC Circuit Board (series/parallel)

DC 3-way or 4-way switch circuit board

DC Open Class (i.e. alarm, rocket launcher, etc.)

Electricity 3 (50179)-Wired for Power

Sub-Classes:

Outdoor Utility Lamp

- Indoor Lighting Fixture
- AC Motor Driven Device
- AC Circuit Board

Entering Electronics (Not State Fair Eligible):

Electronic and/or Solid State Devices

Advanced Electricity (Not State Fair Eligible):

Sub-Classes:

- Heating Equipment
- Alternative Energy Devices or Models
- Any devices that do not fit into the above categories

Electricity Clover Challenge (50180): See rules on page 76.

Electricity Ready4Life Challenge (50181): See rules on page 76.

Division—Woodworking (4H20/10)

Check-in 5:30-7:30 p.m. on Tuesday, August 1, in Cloverleaf Hall

Judged at 9 a.m. on Wednesday, August 2

Member will be present for judging.

Superintendent..... Jill Mohr
 Assistant SuperintendentRay Mohr

Rules:

- A. An exhibitor may enter one project per class in their appropriate age group.
- B. A 4"x6" card must be attached to the exhibit before check-in, explaining in detail, materials used, tools used, and process used to make the exhibit. If the exhibit has a rustic or outdoor finish, note why that finish was chosen. The class number **MUST** be written in the upper left hand corner of the card. **Failure to meet these project requirements will result in lowering placing one grade.**
- C. All refinished exhibits must include a labeled picture(s) of the item prior to refinishing and pictures of the refinishing in progress. Only original wood species used when the item was made are allowed.
- D. Exhibitors are encouraged to have a pictorial log of project construction showing the steps used.
- E. Precut kits are not allowed in any class.
- F. All exhibit classes will be **conference judged**. Conference judging sign up will be available at check in.
- G. **Exhibits made from the 4-H manual: exhibitors are encouraged to enhance their projects, (for example stain, paint, embellish with decorations, etc.).**

Small Engine Operation (Not State Fair Eligible): Exhibit an operable small engine (no more than 20 horsepower) overhauled or rebuilt by the 4-H member. Include a written maintenance schedule for the engine and a brief description of steps taken by the member in overhauling or rebuilding the engine. During conference judging, the exhibitor should be prepared to discuss his/her engine overhaul or rebuilding experience and to operate the engine for a short time.

Small Engine Display (50294): Exhibit a display no larger than 4’x4’ selecting one of the following options:

1. Ignition System: Identify the parts of the ignition system and explain how magnetic energy is produced through the ignition system to ignite the spark plug; **OR**
2. Compression System: Explain how heat energy is produced by an engine and converted into mechanical energy; **OR**
3. Heat Transfer: Explain how heat is transferred through the cooling and lubrication systems of an air cooled or water cooled engine; **OR**
4. Filter Maintenance: Explain the proper maintenance and cleaning of the air, fuel and oil filters of an engine; **OR**
5. What does a Serial Number Reveal: Explain the various information that can be learned from the serial number or identification number stamped on the shroud of a Briggs and Stratton engine; **OR**
6. Tools to do the Job: Identify and explain the function(s) of different specialty tools needed for small engine work; **OR**
7. Experimentation: Explain through illustration and experiment you conducted from the project manual showing the results of your work.

The exhibitor should be prepared to discuss his/her project during conference judging.

Small Engine Clover Challenge (50296): See rules on page 76.

Small Engine Ready4Life Challenge (50297): See rules on page 76.

Division — Garden Tractor Safety & Operation (4H20/10)

Check-in and Judging at 9 a.m., Wednesday, August 2

Meet at 4-H office in Cloverleaf Hall

Superintendent.....Matt Wertz

Rules:

- A. Exhibitors will be required to operate a garden tractor and **may be required to complete a test on safety and maintenance of equipment.**
- B. Exhibitor must be present during judging.
- C. Equipment will be furnished.

Classes:

Garden Tractor, Ages 8-12 (Not State Fair Eligible)

Garden Tractor, Ages 13+ (Not State Fair Eligible)

Tractor Operator Contest-Junior Show

Check-in and Judging at 9 a.m., Saturday, August 5

Meet at the Grandstand Arena

Rules:

- A. As of 2017 the Tractor Operator Contest will be organized by the Junior Show. To register for this contest please visit www.mcleancountyfair.org.
- B. Tractors will be furnished by dealers. Contestants in class 2271 will operate utility tractors in the 50 hp range.
- C. Visit www.mcleancountyfair.org for test and course information, and to enroll in the state contest held at the same time and place.
- D. All drivers must participate in safety exercise held prior to operator contest.

Class 2271 **Tractor Operator, Ages 14+:** Exhibitors will complete the activities in class 2272 and operate tractors in a competition utilizing the National and Illinois contest courses.

Class 2272 **Tractor Maintenance (No Driving), Ages 8+:** Exhibitors will complete a written test, a parts identification test, and will identify safety issues on a stationary tractor.

Division — Tractor Project Display (4H20/10)

Check-in 5:30-7:30 p.m. on Tuesday, August 1, in Cloverleaf Hall

Judged at 9 a.m. on Wednesday, August 2 in Cloverleaf Hall

Member will be present for judging.

Superintendent..... John Lindsey

See rule 6, page 11 for display and poster size restrictions. All items in the display should be affixed to the display board. NO additional items should be included.

Classes:

Tractor A, Starting Up (50306): Exhibit a display or poster that illustrates one of the following topics: tractor safety; care and maintenance; the tractor as a valuable farm machine; OR an activity listed in the 4-H project manual.

Tractor B, Tractor Operation (50307): Exhibit a display or poster that illustrates one of the following topics: cause and prevention of roll overs, diagram how an air cleaner works; diagram and identify an engine cooling system; regulations for battery & oil disposal; OR another activity listed in the 4-H project manual.

Tractor C, Moving Out (50308): Exhibit a display or poster that illustrates one of the following topics: wagon and bin hazards; diagram and identify open and closed hydraulic systems; mower types and safety features; conveyor types and safety features; OR another activity listed in the 4-H project manual.

Tractor D, Learning More (50309): Exhibit a display or poster that illustrates one of the following topics: method of winterizing a tractor; chemical uses and required safety equipment; parts and process of internal combustion engine; procedure for cleaning and flushing tractor radiator; or another activity listed in the 4-H project manual.

Tractor Innovation Class (50310): Open to youth who were at least 13 years of age on September 1, 2016 and are enrolled in Tractor A, B, C or D. Demonstrate the skills and knowledge you have gained through the Tractor project. This could be related to, but not limited to, advancements in technology, enhancements to crop production, or a topic of interest to the member related to tractors or farm machinery. The exhibit may include, but isn't limited to, original works, objects, demonstrations, digital presentations, programs, websites, games, apps, performances, or posters which you have made. Choose whatever method best shows what you've learned. Your exhibit should not fit in the other exhibit options for this project. You must furnish any equipment you need for your exhibit. Internet service will not be provided for the exhibit. All exhibits must include something visual, such as a printed copy of a digital presentation, which will remain on display during the exhibition. Electronic equipment will only be used during your personal judging time and will not remain on display during the entire exhibit period.

Tractor Clover Challenge (50311): See rules on page 76.

Tractor Ready4Life Challenge Class (50312): See rules on page 76.

Division — Antique Farm Equipment Restoration (4H20/10)

Check-in 5:30-7:30 p.m. on Tuesday, August 1, in Tent North of Cloverleaf Hall

Judged at 9 a.m. on Wednesday, August 2 in Tent North of Cloverleaf Hall

Member will be present for judging.

Superintendent.....

Rules:

- A. All projects must be 25 years old or older.
- B. Notebook detailing steps taken must accompany exhibit.
- C. An Antique Farm Equipment Restoration form must be submitted with fair entry (available from Extension office)
- D. Due to space limitations, some exhibits may be displayed outdoors under tent cover.
- E. Implements must be detached from tractors.
- F. Exhibitors limited to one entry per class.

Classes:

Antique Tractors Class (Not State Fair Eligible)

Antique Lawn & Garden Tractors Class (Not State Fair Eligible)

Antique-all other equipment Class (Not State Fair Eligible)

Division — Aerospace (4H20/10)

Check-in 5:30-7:30 p.m. on Tuesday, August 1, in Cloverleaf Hall

Judged at 9 a.m. on Wednesday, August 2

Superintendent.....Bret Birky

Assistant Superintendents..... Mitch Birky, Lyndsey Birky, Dave Haab, Loren Heusel

A member may enter one or more aerospace categories.

In order to be state fair eligible, Aerospace exhibits must meet the following size restrictions: Rockets or model aircraft can be no larger than 3'x3'. See rule 6, page 11 for display and poster size restrictions.

Classes:

Rocketry (50130)

- A. Exhibit one model rocket that may be a kit or scratch built. Must be flyable, have balsa wood fins and a recovery system in place, but engines not installed.
- B. If applicable, bring the printed directions for construction of the rocket with your project in an envelope with your name on it.
- C. Bring with your project a 4"x6" card with a short explanation of the most difficult problem you had building your rocket and include the number of years you have built a rocket. Do not include your name on the card.
- D. Judge will hold a post judging critique session immediately after the judging.

Sub-Classes:

Rocketry, Class 1: Ages 8-9

Rocketry, Class 3: Ages 12-14

Rocketry, Class 2: Ages 10-11

Rocketry, Class 4: Ages 15+

There is a rocket launch open to all 4-H members, on Saturday at 1 p.m., weather permitting. You may launch your display rocket or a different one. More information available at check-in.

Kites (Not State Fair Eligible) Member will be present for judging.

- A. A member may enter either or both classes in their age category for a total of two kites.
- B. Exhibit should be a handmade kite, not a kit, in good flying condition.
- C. The exhibit will be a static display.
- D. Conference judging will be scheduled at check-in.
- E. Detailed instructions on how to build the kite for classes 2285, 2287, and 2289 are in your project book. Members are encouraged to use creativity with the colors and materials used to create the sail and tail if applicable.

Sub-Classes:

Diamond Kite Class, Ages 8-11

Create Your Own Kite Class, Ages 8-11

Nagasaki Hata Fighter Kite Class, Ages 12-14

Create Your Own Kite Class, Ages 12-14

Brouhaha Box Kite Class, Ages 15+

Create Your Own Kite Class, Ages 15+

Model Airplanes (Not State Fair Eligible) Member will be present for judging.

- A. Exhibit one **balsa wood** model airplane in good flying condition.
- B. Airplanes should be the balsa and fabric type (tissue, polyester) and may be either a kit or scratch built.
- C. Exhibit will be a static display and will not be flown.
- D. Conference judging will be scheduled at check-in. Members should bring the printed directions for construction of the plane if applicable.
- E. Suggested projects range from beginner balsa and tissue models to advanced R/C models.

Sub-Classes:

Model Airplanes, Class 1 Ages 8-11

Model Airplanes, Class 2 Ages 12-14

Model Airplanes, Class 3 Ages 15+

Aerospace Display (50131) Member will be present for judging.

- A. Any exhibit related to aerospace that does not fit into any other class.
- B. The exhibit may include, but isn't limited to, original works, objects, demonstrations, digital presentations, programs, websites, games, apps, performances, or posters which you have made. Choose whatever method best shows what you've learned. You must furnish any equipment you need for your exhibit. Internet service will not be provided for the exhibit. All exhibits must include something visual, such as a printed copy of a digital presentation, which will remain on display during the exhibition. Electronic equipment will only be used during your personal judging time and will not remain on display during the entire exhibit period. If exhibit is a poster or display it must follow size restrictions in rule 6 on page 11.
- C. Include an explanation of the exhibit for public understanding with explanation mounted directly on the exhibit.
- D. Conference judging will be scheduled at check-in.

Sub-Classes:

Aerospace Display, Class 1: Ages 8-11

Aerospace Display, Class 2: Ages 12-14

Aerospace Display, Class 3: Ages 15+

Aerospace Clover Challenge (50132): See rules on page 76.

Aerospace Ready4Life Challenge (50133): See rules on page 76.

Division — Welding (4H20/10)

Check-in 5:30-7:30 p.m. on Tuesday, August 1, in Tent to North of Cloverleaf Hall

Judged at 8:00 a.m. on Wednesday, August 2 in Tent to North of Cloverleaf Hall

Member will be present for judging.

Superintendent..... Stephen Froidcoeur

Exhibits displayed in the welding classes must have prior permission of the superintendent due to size and space requirements. Classes are open to items that could not be made without the use of a welder. Exhibit can be made with any type of welder. Include a 4"x6" card describing the type of welder and materials used, and explaining how the project is used.

Please include detailed plans of the project. Only industrial type welding projects, completed by youth in at least the 7th grade by 9/1/2016 are State Fair eligible.

Classes:

Welding (50133):

Sub-Classes:

Welding Class 1, Ages 10-14

Welding Class 2, Ages 15+

Welding Clover Challenge (50134): See rules on page 76.

Welding Ready4Life Challenge (50135): See rules on page 76.

Division — Geospatial (Not State Fair Eligible-4H20/10)

Check-in 5:30-7:30 p.m. on Tuesday, August 1, in Cloverleaf Hall

Judged at 9 a.m. on Wednesday, August 2 in Cloverleaf Hall

Member will be present for judging.

Superintendent..... Martina Melvin

Rules:

- A. **See the Rules & Regulations section (pages 11-12) for general requirements for Entries & Exhibits. See rule 6, page 11 for display and poster size restrictions. Failure to meet requirements will result in lowering of placing by one grade.**
- B. Exhibitors may bring laptop or GPS equipment for demonstration purposes during judging, but must remove it following judging. All entries must have exhibit material(s) to remain on display during the entire fair, i.e. notebook, display, poster, etc.
- C. Exhibitors may show one exhibit in the “Exploring Spaces” series and one exhibit in the “GPS/Geocaching” series. However, there must be no significant overlap between the exhibits if exhibiting in both series.
- D. For GPS/Geocaching Classes: Please refer to the “GPS/Geocaching Supplement” available at the Extension office or online at: <http://web.extension.illinois.edu/lmw/mclean4hfair/1100.html> for more information.

Classes:

Exploring Spaces, Going Places I: Using the ‘Take Me on a Tour’ activity, exhibit a display and map showing four-to-six tour sites, geo-tools used to create the map, positional data for the sites, and information about the selected sites.

Alternatively use the information from the ‘What Are Geographical Tools?’ activity,

exhibit display/poster showing and describing ten mapping tools. Explain how the mapping tools are used and why maps are important.

Exploring Spaces, Going Places 2: Using the table from the ‘Take Me on a Tour’ activity, exhibit a map showing recreational, historical or public service sites in your community. Determine if there is a need for additional community resources. Make written suggestions for what resources should be added on your map.

Exploring Spaces, Going Places 3: Exhibit a computer generated map with layered data that provides information on a community need. Explain how you identified the need, gathered information, and provide recommendations on how to solve the need. Use the template from the ‘Take Me on a Tour’ activity to gather data for the map.

GPS/Geocaching 1: Exhibit a poster or display depicting one or more of the following: GPS/Geocaching terminology; geocaching safety; or geocaching etiquette.

Alternatively, exhibit a poster or display showing how to properly build, hide, officially post online, maintain, and inactivate a regular geocache.

GPS/Geocaching 2: Exhibit a poster or display depicting one or more of the following: How GPS works; the concepts of triangulation, bearing, distance, and negotiating around an obstacle; the similarities and differences between GPS navigation and standard compass and map reading; Universal Transverse Mercator vs. different formats of latitude/longitude for the same waypoint including Universal Transverse Mercator; or multi-caching using a GPS with mapping software to create a map of land objects (campsites, trails, trees, etc.). **Alternatively**, exhibit a poster or display showing how you created a multi-cache, officially post online, and provide evidence to show/demonstrate others have been able to find.

Division— Robotics (4H20/10)

Check-in 5:30-7:30 p.m. on Tuesday, August 1, in Cloverleaf Hall

Judged at 1 p.m., Wednesday, August 2, in Cloverleaf Hall

Member will be present for judging.

Superintendent.....Stephen Gibson

Assistant Superintendent Amanda Gibson

All projects should check-in on Tuesday. A written explanation of the project should be presented at check-in. Conference judging sign up for all classes will be done at check in. Exhibitors may bring their own robot or use a base robot provided by McLean County Extension. If needed, exhibitors should bring their own computers. Exhibitors should bring their robot Wednesday at 1 p.m. and will take it home after judging.

Robotics Platforms: Exhibitors can enter only one class in Robotics Platforms. Exhibits in this class are designed to be used with the 4-H Robotics Platforms curriculum which uses LEGO Mindstorms (NXT or EV3). Any other programmable robot kit should be exhibited under the Innovation Class or Open Source Robotics Class. **Exhibitors are also required to bring a Robotics Notebook in which they have recorded their engineering design experience.**

Robotics I Beginning (50284): Exhibitors should complete Activities 1-6. Exhibitors will design, build and program a robot that can autonomously follow a predetermined path that changes direction at least four times during a single run.

Robotics I Intermediate (50285): Exhibitors should complete Activities 7-12. Exhibitors will design, build and program a robot that uses at least one sensor to autonomously follow a path, respond to, and or avoid obstacles. Exhibitors in this class must use at least one sensor in their robot design.

Robotics 2 (50286): Exhibitors should complete Activities 1-7. Exhibitors will design, build and program a robot that uses sensors and programming to complete one of the provided challenge

Junk Drawer Robotics: All exhibits should be original designs made with everyday objects and materials. Exhibits with purchased kits will not be accepted. Exhibitors are also required to bring their Junk Drawer Robotics Youth Robotics Notebook with the sections completed for the project that is exhibited, including the sections leading up to the activity which is exhibited. For example, if a youth is bringing Activity E from Junk Drawer Level 1, they should have robotics notebook sections A-E completed.

Junkdrawer Robotics I, Give Robots a Hand (50287): Exhibit any item from the “To Make” activity from the Junk Drawer Robotics Level 1 Book. Be sure all robotics notebook sections within the module being exhibited are filled in.

Junkdrawer Robotics II Robots on the Move (50288): Exhibit any item from the “To Make” activity from the Junk Drawer Robotics Level 2 Book. Be sure all robotics notebook sections within the module being exhibited are filled in.

Junkdrawer Robotics III Mechatronics (50289): Exhibit any item from the “To Make” activity from the Junk Drawer Robotics Level 3 Book. Be sure all robotics notebook sections within the module being exhibited are filled in.

Robotics Innovation Class (50290): Open to youth who were at least 13 years of age on September 1, 2016 and are enrolled in Robotics or Junk Drawer Robotics. Exhibit an original robot, either homemade or a kit that does not fall under Robotics Platform, that can complete a task

Open Source Robotics (50292): Robot exhibits in this class must be either originally designed or built from a kit of reconfigurable parts and components. Autonomous control of the robot must be achieved using an “open source” platform such as Arduino or Raspberry Pi and can be programed using a coding language that is publically available. Robots must be able to complete at least one physical task that may include following a path or manipulating an object, and it must receive and respond to at least one form of input such as avoiding an obstacle or choosing between two colors.

Robotics Clover Challenge (50291): See rules on page 76.

Robotics Ready4Life Challenge (50293): See rules on page 76.