

4-H MECHANICS PROJECT



Step It Up!

Are You Into It?

The Mechanics project examines a range of areas linked to practical applications of power, energy, and electricity. The project includes practical applications based on understanding the basic principles. Experience the technology firsthand while increasing technical and scientific literacy, communications and decision-making skills.

- Learn skills and techniques to construct or repair needed items
- Develop the knowledge of safe practices and procedures
- Develop an understanding of the basic principles and theories of electricity.
- Increase knowledge and concern regarding the generation, transmission, and distribution of electric energy
- Gain experience in Science, Engineering, and Technology abilities

Pass it on! Now that you know how, share it with others. Here are ideas to get you started.

Communication

- Present safety information related to mechanical systems
- Demonstrate the workings of a mechanical system
- Teach how to construct or repair a mechanical system

Here's what you can do all year!

Citizenship

- Promote safety related mechanical systems in your community
- Do a small engine repair for the community
- Check friends' homes for electrical safety issues

Leadership

- Organize a safety workshop
- Organize a lawnmower tune-up clinic
- Host a safe/responsible driving presentation
- Give a demonstration on winter driving tips

Starting Out Basic / Level 1

- Understanding safety and equipment used in welding
- Learn about electricity and electronics as they fit into your daily life
- Identify small engines in your home and garage
- Discover how engine work and how they are used in different machines
- Understand the risks and importance of safety related to all mechanical systems

Learning More Intermediate / Level 2

- Learn about different methods of welding and what materials are best suited for each type of welding
- Learn the different types of circuits and how they are compare and how to construct each
- Learn about the parts of your lawn mower and how to make adjustments to the fuel and ignition systems
- Diagnose engine problems and repair engines
- Identify and eliminate risks in using mechanical systems

Expanding Horizons Advanced / Level 3

- Experiment with different welds and beads for joints for constructing product
- Discover how electrical systems supply power to your home
- Practice safe operation of engines and engine driven systems including tractors, combines, mowers, and other applications
- Restore, repair, modify or use engine and drive system knowledge in practical ways with tractors

4-H
GROWING TOGETHER



Take mechanics further!

Here are other opportunities to explore mechanics:

- Visit companies that have mechanical departments
- Go online to use mechanics simulations to explore more
- Host an antique tractor show in your community
- Start your own business using what you learn in mechanics
- Start a "Fix This" competition in your club or county
- Explore apprenticeships and internships to learn more about your mechanical interests
- Attend Iowa 4-H Youth Conference and participate in workshops, motivational speakers and a community service project, bringing ideas back to your community
- Is it county fair time? Consider taking an exhibit, a piece of your project learning to the fair for judging and to show off what you've learned throughout the year. It might get selected to go to the Iowa State Fair.
- Contact your county ISU Extension Office for other local workshops, activities, and events
- Meet others interested in mechanics. Check out camps at the Iowa 4-H Center.
- Interested in a college education in the area of mechanics or engineering? Schedule a visit with Iowa State University to explore those majors. www.iastate.edu

Exhibit Ideas

- Restore an automobile
- Present or create display on safe/responsible driving
- Prepare poster on "How to Drive Cheaper and Smarter"
- Display comparing properties of gasoline and diesel engines
- Exhibit small engine project
- Give small engine demonstration
- Wind generator design exhibit
- Design a circuit
- Electricity safety poster/display
- Tractor restoration (body)
- Restore a tractor engine
- Tractor safety poster [to keep in the same form----Construct (or create or display) a safety poster]
- GPS-guided information poster
- Prepare an educational exhibit on welding safety
- Prepare welding project

Resources

4-H Resources*	Other Resources	Record Keeping
<ul style="list-style-type: none"> • Exploring 4-H Automobile Restoration Opportunities (4H 232) • Online 4-H Small Engine Project http://www.4-h.org/resource-library/curriculum/4-h-small-engines/ • Arcs and Sparks: Shielded Metal Arc Welding http://estore.osu-extension.org/productdetails.cfm?PC=2565 • Electricity Projects Level 1-4 (4H 410A) (4H 410B) (4H 410C) (4H 410D) • Small Engine Projects Level 1-3 (4H 715A) (4H 715B) 	<ul style="list-style-type: none"> • The Fabricator http://www.thefabricator.com/ • "How-to" Books • Shop Manuals for model you are working on • Classic Motorbooks • Hemming Motor News • Electrical Worker's Union http://www.ibew.org/ • The Iowa Energy Center www.iowaenergycenter.org • Service Manuals • Equipment magazines • Gas Engine Magazine 	<ul style="list-style-type: none"> • 4-H Yearly Summary (4H 0096) • Basic 4-H Project Record (4H 0096A) • Experienced 4-H Project Record (4H 0096B) • Advanced 4-H Project Record (4H 0096C) • Recordkeeping Self-Evaluation (4H 98, PDF)

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