

**4-H
PROJECT
SELECTION
GUIDE**

Kit Carson County

2023-2024

BEEF

The 4-H Beef project is an excellent way to learn about the different phases of the beef industry in Colorado and the rest of the nation. Your involvement in this project allows you the opportunity to develop and use new life skills by caring for a market animal or building your own herd.

Breeding & Market Beef

These projects are for members 8-18 years old. These projects are designed for those members who want to learn more about the beef industry by starting his/her own herd. Learning experiences:

- Learn about beef cattle
- How to identify the parts of a calf
- Identify breeds of cattle
- Different types of feeds
- Evaluating different beef animals
- Learn about nutritional requirements for beef cattle
- Learn about a cow's digestive system
- Identifying common cattle diseases
- How to deal with current issues related to raising beef
- Gain leadership skills by helping others learn about cattle
- Explore career opportunities in the beef industry
- Investigate technology's impact on beef production
- Purchase, feed, and care for animals
- Learn about goal setting
- Learn how to keep records
- Learn how to assume responsibility
- Learn to care for, train and handle animal safely
- Learn how to take care of equipment
- Learn how to show your animal
- Gain knowledge of sound management practices
- Develop sportsmanship
- Exhibit animal on tour or at a fair

GOATS

Why goats? This project teaches you to care for live animals by learning about animal health, nutrition, selection and breeding.

Breeding & Market Goat

These project are for members 8-18 years old. Learning experiences:

BEGINNERS:

- Learn how to properly care for a goat
- Learn how to produce a safe, wholesome product
- Identify the parts of a goat

- Learn about different types of feed
- Learn how to evaluate a goat
- Learn about a goat's digestive system
- Identify common goat diseases
- Learn how to keep records
- Learn how to assume responsibility

INTERMEDIATES:

- Investigate technology's impact on goat production
- Learn how to show and exhibit your animal
- Purchase, feed and care for animals
- Learn about goal setting
- Gain knowledge of sound management practices
- Develop sportsmanship and public speaking skills

ADVANCED:

- Learn how to deal with current issues related to raising goats
- Gain leadership skills by helping others learn about goats
- Explore career opportunities in the goat industry
- Build lifelong friendships

POULTRY/TURKEY

The poultry project is designed to help you learn about chickens, turkeys and other poultry.

Show, Breeding & Market Chickens Breeding & Market Turkeys Geese & Ducks

This project is for members 8-18 years old. Learning experiences:

- Learn about poultry
- Learn how to produce a safe, wholesome product
- Identify the parts of various poultry
- Practice evaluating poultry
- Learn about nutritional requirements and different types of feed
- Learn about a chicken's digestive system
- Identify common poultry diseases
- Learn how to keep records
- Learn how to assume responsibility
- Investigate technology's impact on poultry production
- Learn how to exhibit your animal
- Purchase, feed and care for birds
- Learn about goal setting
- Gain knowledge of sound management practices
- Develop sportsmanship and public speaking skills
- Learn how to deal with current issues related to raising poultry
- Gain leadership skills by helping others learn about poultry

- Explore career opportunities in the poultry industry
- Raise your own birds

RABBIT

Do you like your rabbits? Do you want to learn how to raise and care for rabbits? Then this project is for you.

Breeding & Market Rabbit

These projects are for members 8-18 years old. Learning experiences:

- Learn about rabbits
- Learn to identify the parts of a rabbit
- Identify breeds of rabbits
- Evaluate different rabbit breeds
- Purchase, feed and care for rabbits
- Learn about goal setting
- Learn how to keep records
- Learn how to assume responsibility
- Learn about nutritional requirements for rabbits
- Identify common rabbit diseases
- Exhibit the rabbit at tour or county fair
- How to deal with current issues relating to raising rabbits
- Gain leadership skills by helping others learn about rabbits
- Explore career opportunities in the rabbit industry
- Develop sportsmanship and public speaking skills

SHEEP

Why sheep? This project teaches you to care for live animals by learning about animal health, nutrition, selection and breeding.

Breeding & Market Sheep

These projects are for members 8-18 years old. Learning experiences:

- Learn about sheep
- Learn how to produce a safe, wholesome product
- Identify the parts of a sheep
- Practice evaluating sheep
- Learn about nutritional requirements and different types of feed
- Learn about a sheep's digestive system
- Identify common sheep diseases
- Learn how to keep records
- Learn how to assume responsibility

- Investigate technology's impact on sheep production
- Learn how to show and exhibit your animal
- Purchase, feed and care for animal
- Learn about goal setting
- Gain knowledge of sound management practices
- Develop sportsmanship and public speaking skills
- How to deal with current issues relating to raising sheep
- Gain leadership skills by helping others learn about sheep
- Explore career opportunities in the sheep industry

SWINE

Why swine? The swine project teaches participants proper methods of selecting, raising, breeding and marketing swine. Either market or breeding animals can be raised.

Breeding & Market Swine

These projects are for members 8-18 years old. Learning experiences:

- Learn about swine
- Learn how to produce a safe, wholesome product
- Identify the parts of a pig
- Practice evaluating swine
- Learn about nutritional requirements and different types of feed
- Learn about a pig's digestive system
- Identify common swine diseases
- Learn how to keep records
- Learn how to assume responsibility
- Investigate technology's impact on swine production
- Learn how to exhibit your animal
- Purchase, feed and care for pigs
- Learn about goal setting
- Gain knowledge of sound management practices
- Develop sportsmanship and public speaking skills
- How to deal with current issues relating to raising swine
- Gain leadership skills by helping others learn about swine
- Explore career opportunities in the swine industry

HORSE

The purpose of the 4-H Horse Project is to help youth learn how to properly care for and enjoy your horse while developing Life Skills. 4-H members may own or lease the horse used in this project. Through the 4-H Horse Project, youth can increase their knowledge and improve their horsemanship skills by learning basic safety and handling principles. As a member in the 4-H Horse Project, you will learn about your own horse, other horse breeds, safety, body colors and markings as well as health and care. Youth will also learn about facilities, grooming and training.

Horse

This project is for members 8-18 years old. Learning experiences:

Starting Out – Beginner:

- Learn about the requirements of the 4-H Horse project
- Learn tips for choosing the appropriate horse
- Learn safety in horse groundwork
- Identify common horse breeds, colors, and markings
- Learn feeding and healthcare basics
- Develop beginner horsemanship and riding skills
- Keep records and set goals
- Learn to assume responsibility

Learning More – Intermediate:

- Learn about characteristics and uses of different horse breeds
- Learn about equine nutrition, digestion, and pasture management
- Learn about common health problems and preventative care
- Develop intermediate horsemanship and riding skills
- Develop sportsmanship when exhibiting
- Keep records and set goals
- Develop public speaking skills
- Identify lameness, unsoundness, and blemishes

Exploring Depth – Advanced:

- Learn how to deal with current issues and explore career opportunities in the horse industry
- Learn about diseases, horse conformation, and structure
- Develop advanced horsemanship, riding skills, and try new disciplines
- Gain leadership skills by helping others learn about horses
- Learn about types of feed and their nutritional values
- Build lifelong friendships

BEEKEEPING

This project is for members 8-18 years old.

Unit 1 – Understanding the Honey Bee

Learning experiences:

- Shadow an experienced beekeeper and learn to use equipment, open the hive, and clean up procedures
- Learn about the history of beekeeping and why honey bees are valuable
- Learn about the three different types of honey bees, their anatomy and life stages
- Observe what happens at the entrance of a hive. See the different activities of the honey bee.
- Catalog various species of flowers and observe the bees landing on the blooms
- Lease, obtain equipment and take care of honey bees

Unit 2 – Working with Honey Bees

Learning experiences:

- Learn the various ways of obtaining bees and take care of a beehive of your own for a full year
- Learn about the various diseases and mites common to honey bees
- Visit Beekeepers Association meetings and join a community of beekeepers
- Keep records of the honey bees activities; their conditions, equipment, finances, and your labor
- Learn how to manage a bee hive and how to keep them alive and healthy
- Learn how to extract honey and market it for sale

Unit 3 – Advanced Beekeeping

Methods

Learning experiences:

- Learn advanced techniques for taking care of bee hives
- Learn how to keep a strong, populous colonies with young queens and the art of labeling your queens and requeening when needed
- Learn how to manage mites and other issues with the honey bees
- Keep record sheets of your work and expenses
- Learn how to split colonies and increase your hive numbers

Unit 4 – Advanced (*intermediates & seniors only*)

Learning experiences:

- Investigate an area of interest related to beekeeping to display in a notebook.
- Write a business plan for your small bee product(s) operation.

- Give a demonstration related to your project about bees to a group.
- Shadow an experienced beekeeper.

CAT

Do you love learning about cats? Would you like to learn more about cat breeds, behavior, good health, grooming and feeding? Then the cat project is for you. This project is for members 8-18 years old.

Unit 1 Purr-fect Pals

This unit is designed for members who have little to no knowledge about their cats. Learning experiences:

- Gather information about owning a cat
- Decide on the best type of cat for your family
- Properly groom a cat
- Demonstrate how to pick up, hold and carry a cat
- Communicate the procedure and benefits of spaying/neutering
- Use body type to help you identify different breeds of cats
- Name, locate and describe at least 15 cat body parts
- Conduct a cat hazards home survey
- Decide on type of litter preferred
- Develop a budget
- Create an up-to-date record of vaccinations

Unit 2 Climbing Up

This unit is designed for members with more experience in owning and showing cats. Learning experiences:

- Learn more about cat identification
- Learn about training and showing cats
- Learn more about responsible cat ownership

Unit 3 Leaping Forward

This unit is designed for members who have advanced skills in showing and training cats. Members will do the following:

- Compare aged versus younger
- Identify cat's body system
- Record community cat laws
- Assess your own leadership skills

CERAMICS

You will learn about three different clays; earthenware, stoneware, and porcelain and how to finish each type. This project is for members 8-18 years old.

Units 1 & 2

Learning experiences:

- Learn glazes, glazing, and underglazing techniques
- Use of elementary tools and equipment
- Develop a ceramic vocabulary
- Use of additional tools and equipment
- Practice skills of basic preparation and techniques
- Finish and exhibit one or two pieces made using skills described in the manual

Units 3 & 4

Learning experiences:

- Learn overglazing techniques
- Use skills and techniques associated with unfired finishes
- Finish and exhibit one or two pieces made using skills described in the manual

Units 5 & 6

Learning experiences:

- Learn how to assemble shoulder plate dolls
- Learn techniques and skills on how to create a life like doll
- Use skills related to hand molding
- Design, plan, and adapt one or two pieces described in the manual
- Finish and exhibit one or two pieces made using skills described in the manual.

COMPUTER POWER

Level 1 Discovering Computer Science & Programming Through Scratch

This project is for members 8-18 years old. Learning experiences:

- Interact with a series of tutorials and challenges within the Scratch environment
- Introduces the five fundamental principles of computer programming
- Beginning programming using Scratch
- Exhibit 8 different commands including looping and getting input from the keyboard and mouse

Level 2 Discovering Computer Science & Programming Through Scratch

This project is for members 11-18 years old. Learning experiences:

- Learn more about generalizations and modularity
- Introduce clones and lists in Scratch
- Exhibit a modified program using Scratch by comparing the programs or creating an animated storybook or a video game

Level 3 Discovering Computer Science & Programming Through Scratch

This project is for members 11-18 years old. Learning experiences:

- Learn about recursive programming
- Use recursion to help solve problems
- Learn how to draw intricate fractals through recursive programming
- Exhibit an original program using a higher level programming language such as Python, Javascript, C++, etc.

Computer Science & Coding

This project is designed for members 11-18 years old. Learning experiences:

- Build upon coding skills learned in earlier units through using Scratch or Python
- Advance web development skills
- Explore careers in Computer Science

ELECTRIC

Would you like to learn about the “magic” of electric circuits, magnetism, motors and electronics? Or would you like to learn to build burglar alarms, select stereo equipment or other electronic items?

Unit 1 Magic of Electricity

This unit is designed for members 8-18 years old with little or no prior electrical energy experience. Learning experiences:

- Plugging in
- Bright lights
- Control the flow
- Circuit sense
- Electric attractions
- Make it spin

Unit 2 Investigating Electricity

This unit is designed for members 8-18 years old who understand basic electrical principles. Learning experiences:

- AC and DC electrical currents

- Investigating Ohm’s law
- To flow or not to flow
- Series and parallel circuits
- Switching circuits
- Building an alarm

Unit 3 – Wired for Power

These units are designed for members 8-18 years old. Learning experiences:

- The code of safe practices
- How much electricity are you using?
- Fuses and circuit breakers
- Types of wires and bulbs
- Appliance nameplates
- Plug/outlet types, grounding
- Locating circuits in your home

Unit 4 Entering Electronics – Advanced

This unit is designed for members 14 years and older with an understanding of advanced electrical principles.

Learning experiences:

- LED or SCR
- Operating with diodes
- Performance with LED
- Burglar proof
- Turn up the volume

ENTOMOLOGY

This project is for members 8-18 years old.

Level 1 (Grades 3-5)

Learning experiences:

- Study the parts of an insect
- Make either an insect collection with between 25 and 75 adult insects OR a display board telling about some phase of your project work (equipment, activities, etc.)
- Construct and operate a pitfall trap
- Study how insects communicate
- Learn about beneficial and destructive insects (invasive insects)
- Study the biodiversity of insects in different habitats
- Learn about integrated pest management
- Observe cricket behavior and communication

Level 2 (Grades 6-8)

Learning experiences:

- Learn more ways to trap insects
- Study the different orders of insects
- Learn which plants attract butterflies

- Make a metamorphosis wheel
- Study the stages of mosquito development
- Develop special insect collections
- Learn more about insect collections
- Learn more about invasive species, integrated pest management, and forensic entomology

Level 3 (Grades 9-12)

This is designed for older members who have completed all other units. Learning experiences:

- Explore entomology careers
- Use the scientific method to learn about insects
- Make a dichotomous key
- Seek out new resources and dig deeper into project topics

FILMMAKING

This unit is for members 8-18 years old. It is advisable to understand the basics of photography before beginning in this project. Learning experiences:

- Use video cameras
- Use a tripod
- Capture and transfer video footage
- Edit storytelling boards
- Plan and design video projects using their choice of categories: Animation, Narrative, Documentary, Promotional or Voices of 4-H History.
- Animation is a film created by techniques that simulate movement from individual images
- Narrative is a film which tells a story based on fact or fiction
- Documentary is a film which presents factual information about a person, event or process
- Promotional is a film or public service announcement that help publicize 4-H programs or other causes or interests
- Voices of 4-H History is a historical perspective on 4-H using a combination of above designs

GARDENING

4-H members usually complete the Unit 1 book in two years and take up to three years to complete Units 2, 3 and 4.

Unit 1 See Them Sprout

This unit is designed for members 8-18 years old.

Learning experiences:

- When, where, and what to plant
- Types of soils and soil preparation
- Cool and warm-season vegetables

- Rows versus hills
- Seed preparation and garden tools
- Plant parts and how plants are used
- Integrated Pest Management
- When to harvest

Unit 2 Let's Get Growing

This unit is designed for members 8-18 years old.

Learning experiences:

- Seed varieties and rotating crops
- Starting seed indoors
- Hardening off
- Plant properties
- Preventative pest control
- Specialty harvest
- Selling the harvest
- Horticulture careers

Unit 3 Take Your Pick

This unit is designed for members 8-18 years old.

Learning experiences:

- Broadcast planting and herb gardening
- Soil structures and seed damage
- Hybrids and pollination
- Animal pests and preservation
- Food industry careers

Unit 4 Growing Profits – Advanced

This unit is designed for the advanced senior member (14 years and older). Learning experiences:

- Under cropping and double cropping
- Space saving
- Greenhouses
- Cultivar trials
- Intensive gardening
- Biotechnology
- Hydroponics
- Disease and deficiencies
- Power tools
- Pesticide safety
- Botanists and research careers

GLOBAL CITIZENSHIP

Do you have an interest in learning about the world around you? Do you like to travel? Then this project will help you become connected to the world by learning about other countries and their cultures. Units 1 & 2 are for members 8-18 years old. Units 3 & 4 are for members 11-18 years old.

Unit 1 Study a Country

Learning experiences:

- Investigate a chosen country

- Participate in a pen pal program
- Attend international festivals
- Host foreign guests
- Make and exhibit a notebook illustrating what you learned from this experience

Unit 2 Hosting an Exchange Delegate

Learning experiences:

- Host an incoming delegate from another country or culture
- Make and exhibit a notebook illustrating what you learned from the experience

Unit 3 Youth Counselor for Inbound International Delegation

Learning experiences:

- Serve as a youth counselor for the inbound international delegation coming to the Colorado 4-H program.
- Make and exhibit a notebook illustrating what you learned from the experience.

Unit 4 Exchange Delegate to Another Country

Learning experiences:

- Live with a host family or families in another country as a representative from a standard international program
- Make and exhibit a notebook illustrating what you learned from the experience.

HORSELESS HORSE

The horseless horse program is designed for 4-H members interested in learning about horses but who do not own their own horse. All four units focus on learning life skills that can be easily transferred to the horse project, should a member purchase a horse. This project is for members 8-18 years old.

Unit 1 Making Horse Sense

Learning experiences:

- Learn basic coat colors, breeds and anatomy
- Explore horse behaviors
- Understand grooming and safety concerns

Unit 2 Hooves, Health & Horsemanship

Learning experiences:

- Learn about horse conformation and movement
- Study horse health, unsoundness and blemishes
- Discuss tack and training aids
- Explore the realities of horse ownership

Unit 3 Breaking Ground

Learning experiences:

- Understand horse teeth and feeding requirements
- Discover horse health issues
- Learn about horse judging, riding aids and basic equitation
- Develop leadership skills while helping others

Unit 4 Brushing Up On Horses

Learning experiences:

- Understand parasites, the digestive tract and how to balance rations
- Discuss horse reproduction
- Learn more about advanced movements and showmanship
- Understand basic equine, pasture and housing management skills
- Explore ethics related to the horse industry

LEADERSHIP

Are you ready to step up to leadership? This project will bring out the best in you. You will learn about what it takes to be an outstanding leader. But you will also learn about yourself and what you can do if you put your hands, heart, head and health to work.

Unit 1 Individual Skills You Never Outgrow

Members will build leadership skills by completing a series of character discovery and building activities which provide the foundation for leadership skills. This unit is designed for members 8-10 years old. Learning experiences:

- Complete a series of character discovery and character building activities
- Accomplish one of the following learning experiences
 - Understanding Self
 - Communication
 - Getting Along with Others
 - Making Decisions

Units 2 & 3

Members will build leadership skills completing a series of activities designed for members 11-18 years old.

Learning experiences:

- Build leadership skills by completing a series of activities
- Using the project manuals, complete all activities and summarize at least four learning experiences or challenges
- Set at least one individualized goal to benefit their leadership skills

Units 4 & 5

This unit is designed for 4-H members 14-18 years old who want to improve their leadership and assistance to leaders and members within their 4-H program. Learning experiences:

- Improve their leadership and assistance to leaders within their program
- Using the project manuals, complete all activities and summarize at least two learning experiences or challenges
- Set at least two individualized goals to benefit their leadership skills
- Complete all community service manual activities
- Identify, plan, and deliver a service project in their community

LEATHERCRAFT

This project is for members 8-18 years old.

- It is suggested (not required) to do Units 1-3 in order. Units 4-9 may be taken in any order, and members may exhibit in more than one unit, provided the member is enrolled in and has completed the requirements of each of the units. The primary skill being developed (the new technique you're learning) in the project will help determine which unit to exhibit in.

Unit 1 Introduction Leathercraft & Stamping

Learning experiences:

- The history, sources, structures, tanning techniques, and definitions related to leathercraft
- Learn to prepare leather for stamping, create a design and use stamping tools
- Learn basic methods of lacing and stitching
- Learn basic leather finishing
- Keep accurate records of costs and skills

Unit 2 Beginning Leather Carving

Learning experiences:

- Practice skills learned in Unit 1
- Learn traditional carving
- Learn use of a swivel knife, camouflage tool, pear shader, beveler and veiner, seeder, backgrounder, and decorative cuts
- Learn double loop lacing

Unit 3 Intermediate Leather Carving

Learning experiences:

- Practice skills learned in previous units

- Learn the major skills: traditional carving, inverted carving, or silhouette carving techniques
- Learn to use clear finish, staining/antiquing, two tone finishes, and background dyeing
- Learn more skills for lacing and hand stitching

Unit 4 Advanced Stamping

Learning experiences:

- Practice skills learned in previous units
- Learn about advanced stamping design with minimal carving
- Learn about dyeing, color shading, antique/stain, and finishing techniques

Unit 5 Advanced Leather Carving

Learning experiences:

- Advance your skills in advanced traditional carving, figure carving, pictorial carving, decorative swivel knife carving, embossing or filagree work
- Learn more about dyeing, color shading, antique/stain, and finishing techniques

Unit 6 Sewing Leather

Learning experiences:

- Learn sewing construction skills
- Learn more about hand sewing or machine sewing techniques

Unit 7 Braiding and Untooled Leather

Learning experiences:

- Learn more about un-tooled leather using one or more of these leather art techniques: lacing, braiding, expanding, sculpting, or molding leather.

Unit 8 Master Leathercraft

(This is an advanced unit.)

Learning experiences:

- Advance skills learned in previous units
- Learn to apply multiple techniques (two or more) with skill in a single advanced project

Unit 9 Making & Rebuilding Saddles

(This is an advanced unit.)

Learning experiences:

- Advance skills learned in previous units
- Apply techniques to a completed saddle (a new build or rebuild of existing saddle)
- You will need to find additional resources to help you with this project

METALWORKING

The Metalworking (aka Welding) project is designed to help youth interested in working with metal. This project is for members 8-18 years old. Learning experiences:

- Understand the proper personal protective equipment for welding
- Be able to identify the different weldable metals and the different shapes of metal stock
- Identify the five different types of welding joints
- Understand the various methods to cut, bend and shape metal
- Understand the three most common welding processes
- Construct a project of metal using the skills learned

Select the Unit that best fits your experience, skills and abilities to produce an exhibit project. Calculating weights for the project is required. A resource can be found at www.sss-steel.com/public/pdf/reference-book.pdf

Unit 1 Intro to Welding

- Produce 3 sample welded joints
- Build a project 3' x 3' x 7', under 50 lbs.

Unit 2 Metal Fabrication

- Build a product 3' x 3' x 7', under 100 lbs.

Unit 3 Advanced Metal Fabrication

- Build a project 3' x 3' x 7', under 150 lbs.

Unit 4 Large Exhibit Fabrication

- Exhibit is larger than 3' x 3' x 4' or over 150 lbs.

MODEL ROCKETRY

The model rocketry project is designed to help young people learn how to build and design rockets. This project is for members 8-18 years old.

Unit 1 Introduction to Rocketry

This unit is designed for all members who want to learn more about model rocketry. Learning experiences:

- Learn how a model rocket works
- Understand safe engine installation
- Build two rockets using skills learned
- Learn types of rockets
- Understand the Model Rockets Safety Code
- Learn basic parts of a rocket
- Learn the launching and recovery parts of a rocket

Unit 2 Construction & Flight of Model Rockets

This unit expands on Unit 1 and covers construction and flight of model rockets. Learning experiences:

- Understand the forces of flight and Newton's Laws
- Learn design features of a model rocket including stability
- Understand tools and techniques needed for building model rockets

Unit 3 Intermediate Model Rocketry

This unit is for members who have experience in building and launching model rockets. It is recommended that the member complete the first two units before doing Unit 3. This unit covers new and exciting areas not covered in Unit 2. Learning experiences:

- Learn multi-staging launch systems
- Learn rear and front engine boost-glidors

Units 4 & 6

These units are designed for all members and uses advanced rocketry skills. Learning experiences:

- Learn how to organize a model rocket club
- Learn engine types, classifications, and performance
- Learn how to fit a parachute
- Learn the art of payload launch
- Learn about rocket stability
- Learn how to build a wind tunnel
- Take aerial photographs
- Understand why you need cluster rockets

OUTDOOR ADVENTURES

Unit 1 Hiking Trails

This unit is for members who have little to no experience in hiking. Learning experiences:

- Learn hiking essentials
- Learn how to plan a healthy hike
- Learn the "Leave No Trace Behind" ethics
- Learn about finding shelter and observing nature

Unit 2 Camping Adventures

This unit is for members who have some experience in hiking and camping. Learning experiences:

- Learn about camping gear
- Learn to find the right camping spot
- Camping cuisine
- Learn how to care for nature

Unit 3 Backpacking Expeditions

This unit is for the experienced camper and backpacker.

Learning experiences:

- Learn to plan a healthy and safe backpacking trip
- Apply the “Leave No Trace” ethic when backpacking
- Learn to find your way
- Train for your trip

PHOTOGRAPHY

Units 1 & 2 Photography Basics

This beginning level project is designed for youth 8-18 years old with no prior experience in photography.

Members will explore four project areas:

- Equipment
- Lighting
- Composition
- Skill building

Unit 3 Next Level Photography

This unit builds on the skills learned in Unit 1 and is designed for youth 8-18 years old who have some experience in photography. Members will explore four project areas:

- Equipment
- Lighting
- Composition
- Skill building

Unit 4 Mastering Photography

This level project is for youth 11-18 years old who have advanced photography skills. Learning experiences:

- Master advanced techniques

Unit 5 Low Light Photography

This project is for 4-H members 11-18 years old, who have advanced photography skills. Learning experiences:

- Learn about Safety!!! While taking lightning photos
- Learn about what equipment to use
- Learn techniques to use in low light
- Understand composition and how to use it

Unit 6 Advanced Photography

This unit is for those 4-H members 11-18 years old who have advanced photography experience. Learning experiences:

- Fine tune advanced photography skills
- Develop an advanced skills project
- Choose a photography skill to strengthen

ROBOTICS & ENGINEERING

Are you interested in putting things together and taking them apart? Do you like games and technology? Do you think that computers are fun? Robotics is the project for you! Young people in robotics learn hands-on about engineering design, computer programming, electrical components, how robots move, how robotic arms work and much more. This project is for members 8-18 years old.

JUNK DRAWER ROBOTICS

Levels 1 – 3

Learning experiences:

- Use everyday items to master robotics skills
- Learn about robotic arms that can complete tasks
- Learn about robotic movement
- Learn about mechatronics, electricity, and computer programming

Units 4 – 6 Platform Robotics

This project is for individuals who have any sort of robotics kit. These include, but are not limited to: Arduino Kits, EV3, Brushbot, Hexy, Pushbutton Programming, Cubelets, Robotic Arm Edge, Spark Fun RedBot, WeDo, Multiplo, NXT, and dTETRIX.

Youth interested in this project will work through the beginner materials in Unit 4 and progress through Intermediate Unit 5. For the more advanced youth, Unit 6 is the best choice.

Unit 7 Team Robotics

This unit is for young people participating on a competitive robotics team. Youth who are participating in a 4-H robotics team should enroll in this unit. Youth enrolled in this unit will complete an individual e-record and display board.

SCRAPBOOKING

This project is designed to teach 4-H members about Scrapbooking. The history of your life can be preserved for the next generation by creating a scrapbook filled with your collection of pictures and memorabilia. Memorabilia items to save include ticket stubs, business cards, greeting cards, awards, certificates, letters, postcards, recipes, receipts, and brochures. Learning experiences:

- Learn about the importance of using archival-safe supplies
- Learn basic supplies
- Organize and protect your photographs
- Learn how to crop and mat photographs

- Learn how to create a lay-out
- Learn how to use embellishments to create your personal style
- Practice different techniques
- Tell a story using pictures and journaling

SHOOTING SPORTS

This project is for members 8-18 years old.

Air Rifle, Archery, .22 Rifle, .22 Pistol, Shotgun, Muzzleloading Learning experiences:

- Care for and safety of shooting sports equipment
- Demonstrate safe usage through practice, talks, demonstrations and exhibits
- Demonstrate skills in shooting sports through local, district and state events

Outdoor Skills Learning experiences:

- The history, ethics, laws, and careers around hunting
- Types of hunting and outdoor equipment
- Preparing/planning for hunting including firearm safety and outdoor survival skills
- Hunting skills and techniques such as tracking game, field care and processing of game
- Characteristics of popular game species

Western Heritage Learning experiences:

(Pre-requisite: One year in a Rifle, Shotgun or Pistol project)

- Instill the practices of firearm safety, personal responsibility, and marksmanship along with an appreciation for American history
- Learn in a participatory living history style through the use of historically accurate firearms, clothing, and accessories representative of the years 1860-1900
- Optional: Create an "alias", or name/costume representative of a character in the Old West.

In order to participate in the 4-H Western Heritage Project, 4-H members must be:

1. Nine (9) years of age by December 31st of the current year – Only small bore rifle and shotgun use allowed
2. Eleven (11) years of age by December 31st of the current 4-H year – Long Gun and Sidearm (.22 Rimfire rifle, .22 Rimfire pistol, and shotgun use allowed).
3. Have written permission from a parent or legal guardian to participate in this project in compliance with the Gun Control Act of 1968 and the Youth Handgun Safety Act of 1994.

SMALL ENGINES

This project is for members 8-18 years old.

Unit 1 Crank it Up!

This unit is for members who have little or no experience with small engines. Learning experiences:

- Use operator's manual to guide maintenance repair and adjustments
- Learn major parts of engines
- Importance of clean air to efficiently functioning engines
- How to replace a spark plug and much more

Unit 2 Warm it Up!

This unit is for members who have knowledge of small engines. Learning experiences:

- Learn about different engine types
- Learn the internal parts of an engine
- Specialized tools used
- Engine sizes
- Compression
- Seasoning your engine
- Safety issues
- How to start your own business

Unit 3 Tune it Up!

This unit is for members who have had experience with small engines and it is recommended that the member complete the first two units before doing Unit 3.

Learning experiences:

- Learn about tearing engines down and rebuilding them
- How to use diagnostic tools
- How to "listen" to engines for specific problems
- How to properly maintain engines
- How to use the Internet to find resources, rules and regulations regarding small engines
- Selecting a replacement engine

Unit 4 Advanced Small Engines

This is for members who have an interest in doing a self-determined study of small engines. It's also for members who want to study tractors, cars and other engines.

Learning experiences:

- Plan specific goals and a course of action for a specific topic
- Become a Junior Leader in the small engine project
- Design your own small engines project

SPORTFISHING

Do you like to be outdoors? Do you like to fish? Would you like to learn how to tie flies? Then this is the project for you. You will learn about types of fish, variety of sportfishing equipment, how to make and repair tackle, understand the ecological and social basics of fisheries and management. This project is for members 8-18 years old.

Unit 1 Take the Bait

Learning experiences:

- Learn different casting methods
- Learn how to decide on the proper tackle
- Understand the basics of aquatic ecology
- Learn the importance of a clean environment

Unit 2 Reel in the Fun

Learning experiences:

- Learn how to tie fishing knots
- Practice different types of casting
- Make your own fishing tackle
- Study the different characteristics of fish
- Recognize the importance of water quality for fish habitat
- Understand why fishing regulations are important
- Prepare a fish meal for the family

Unit 3 Cast into the Future

Learning experiences:

- Learn how to determine the age of fish
- Disassemble and reassemble a fishing reel
- Make artificial flies and lures
- Modify fishing equipment
- Design and craft a lure
- Collect and identify aquatic insects

VETERINARY SCIENCE

This project is for members 8-18 years old.

Unit 1 From Airedales to Zebras

Learning experiences:

- Identify breeds of various types of animals
- Learn what animals need and their various roles helping people
- Identify threats to animal safety
- Identify animal body systems
- Learn about feed and medication
- Explore careers with animals
- Learn elementary principals of disease

Unit 2 All Systems Go

Learning experiences:

- Examine health and disease topics
- Learn to recognize normal and abnormal conditions
- Describe how the immune system protects animals from disease
- Explain how diseases can be spread between animals
- Describe parasite life cycles and how to disrupt them
- Protect animals from unsafe feeds
- Explore veterinary specialties
- Make ethical decisions about animals

Unit 3 On the Cutting Edge

Learning experiences:

- Describe the cycles, organs, and hormones involved in animal reproduction
- Explain how genetics influence breeding programs
- Describe cell structure and function
- Design testing strategies to identify diseased animals
- Identify ten diseases that can be spread from animals to humans
- Explain the principles of preventive medicine
- Explain reasons to prevent pet overpopulation
- Describe technology used in the veterinary profession
- Explore the diversity of and preparation for the veterinary professions

VISUAL ARTS

This project is for members 8-18 years old.

Sketchbook Crossroads

The member may stay in this manual for several years but needs to have a different exhibit each year. Learning experiences:

- Explore three media areas: drawing, fiber arts and sculpting
- Understand the elements and principles of design
- Encourage the development of skills for a lifetime
- Choose and evaluate a range of subject matter, symbols and ideas
- Reflect upon and assess the characteristics and merits of your work and the work of others
- Make connections between visual arts and other disciplines

Portfolio Pathways

The member may stay in this manual for several years but needs to have a different exhibit each year. Learning experiences:

- Explore three media areas: painting, printing and graphic design
- Understand the elements and principles of design
- Encourage the development of skills for a lifetime
- Choose and evaluate a range of subject matter, symbols, and ideas
- Reflect upon and assess the characteristics and merits of your work and the work of others
- Make connections between visual arts and other disciplines

WILDLIFE CONSERVATION

Colorado wildlife is one of our state's biggest attractions. Through your project work, you will learn about ecosystems, wildlife conservation, habitat requirements, wildlife behavior, how wildlife species fit into nature's schedule, how they are managed, and how they relate to humans. This project is for members 8-18 years old.

Unit 1 The Worth of Wild Roots

Learning experiences:

- Learn what wildlife conservation has been historically
- Learn the values of wildlife and people
- Accomplish the following
 - Wildlife Roots
 - Wildlife Values
 - Dirt on Both Hands

Unit 2 Living Wild in an Ecosystem

Learning experiences:

- Understand wildlife habitat
- Learn how size and shape of habitat patches affect various wildlife species
- Learn what makes wildlife members go up or down
- Accomplish the following
 - Habitat
 - Wildlife as Part of an Ecosystem
 - Dirt on Both Hands

Unit 3 Managing in a World with You and Me

Learning experiences:

- Learn how we manage wildlife and what agencies are responsible

- Study threatened and endangered species, hunting, wildlife damage management, and invasive species
- Accomplish the following:
 - Wildlife Management
 - Wildlife and People
 - Dirt on Both Hands

WOODWORKING

This project is for members 8-18 years old.

Unit 1 Measuring Up

This unit is appropriate for youth with little or no woodworking experience. Learning experiences:

- Learn how to organize your shop
- Learn how to identify woodworking tools
- Practice woodworking safety
- Learn how to measure and mark boards, use a square, a hand drill, and a hand saw
- Identify different types of nails and screws
- Make a sandpaper block
- Construct a butt joint and use a hammer safely

Unit 2 Making the Cut

This unit is appropriate for youth of any age who may have used a hammer, hand saw, hand or cordless drill, or other basic hand tools. Learning experiences:

- Learn how to select wood based on grain
- Recognize the difference between plywood and fiberboard
- Learn how to develop a plan
- Learn how to use a combination square and make a miter cut
- Learn how to make a curved cut
- Learn how to use a sander
- Learn how to identify different types of woodworking tools and much more!

Unit 3 Nailing it Together

This unit is appropriate for youth who are competent with hand tools and have used a few basic power tools such as power drill, drill press, jig saw, and power sander.

Learning experiences:

- Learn how to stay current with technology
- Learn how to use a T-bevel, powered circular saw, and a radial arm saw
- Learn about hinges, hasps and flush plates
- Learn the difference between clamps
- Learn how to use various types of wood stains and much more!

Unit 4 Finishing Up

This unit is appropriate for youth who feel competent using power tools such as a table or radial arm saw, drill press, and a jig saw. Learning experiences:

- Design a woodworking shop
- Use a router, jointer, portable planer and scraper
- Learn about dovetail joints
- Learn how to use bleaches, strippers, and adhesives
- Learn how to build a wood vehicle, hockey board, step stool or chair, and much more!

ARTISTIC CLOTHING

Project units are designed for members 8-18 years old.

Upcycle Your Style

Learning experiences:

- Experiment with a variety of textile crafts
- Use a variety of tools
- Create/Modify designs
- Decorate garments
- Express imagination

Recycled Clothing

This unit is for members 8-18 years old. Learning experiences:

- Create something new from something old using different types of recyclable materials (old garments, home furnishing items)

Creative Sewing

This unit is for members 8-18 years old. Learning experiences:

- Select a special interest project
- Sew the majority of the project
- Learn new skills and set goals

Buymanship Project

This unit is for members 11-18 years old. Learning experiences:

- Learn styles/colors that flatter body types
- Understand design, fabric and color
- Understand clothing care and construction
- Coordinate with existing wardrobe

Create Your Own

This unit is for members 11-18 years old. Learning experiences:

- Explore topic of interest, such as: learn about lace, pattern design, study historic costumes, and explore careers

CAKE DECORATING

Units 1-3 are for members 8-18 years old. Unit 1 is designed for the younger member or members who have little or no experience. Units 2-3 are where the members start learning how to do tip work. Units 4-6 are for members 8-18 years old. The skills learned in Units 2-3 will be used in these three units. Units 7-9 are for members 11-18 years old. The skills used in these units are more advanced. It is recommended that members take Units 2 or 3 before advancing to these units. Units 10-12 are for members 14-18 years old. These units use advanced skills.

Units 1 – 3

Learning experiences:

- Bake and frost a single-layer cake
 - Develop basic frosting and design skills
 - Develop skills using cake decorating equipment, such as writing, leaf, and star tips on a single-layer cake
- Frost a two-layer cake using three tips: writing, leaf and star

Units 4 – 6

Learning experiences:

- Use a character pan and decorate using recommended tips
- Decorate cupcakes to create different themes or characters
- Decorate cookies to create different themes or cookie structures
- Use cut-up cake to create different shapes or forms and decorate using different tips

Units 7 – 9 (*intermediates & seniors only*)

Learning experiences;

- Using advanced decorating tips (drop or flat surface flowers, flowers made on a flat flower nail, borders and side trims) to create a two-layered cake
- Using fondant to decorate a two-layered cake
- Using advanced decorating skills to create a flower on a lily nail to decorate a cake

Units 10 – 12 (*seniors only*)

Learning experiences:

- Create and decorate tiered cakes of three or more tiers
- Decorate using advanced skills
- Create mold of different shapes using different edible materials
- Create your own project

CLOTHING

Units 1 & 2 STEAM Clothing

These units are for youth 8-18 years old, who have little or no experience in sewing. These units build upon each other skill wise. Be sure to pay attention to what is allowed and now allowed for each unit. Learning experiences:

- Use a sewing machine
- Use a variety of tools
- Sew with simple patterns
- Build on sewing techniques
- Create a simple garment

Unit 3 STEAM Clothing

Unit 3 is for members 11-18 years old. Members in this project are expected to have sewing skills beyond STEAM Clothing 2. This is for the advanced sewer.

Learning experiences:

- Use different types of fabric
- Use more advanced techniques
- Experiment with different types of textile material

Unit 4 Sewing for Others

In this project, you make clothing for someone other than yourself. This unit is for members 8-18 years old.

Learning experiences:

- Make garments for others
 - Learn to take accurate measurements
 - Learn how to adjust patterns

FOODS AND NUTRITION

Units 1 – 4 Cooking Series

These units are for members 8-18 years old. Learning experiences:

- Learn kitchen and food safety
- Learn basic food preparation and nutrition
- Make yeast breads and shortened cakes
- Learn how to cook with herbs and spices
- Learn how to cook with slow cookers
- Have an in-depth exploration of outdoor cooking, party planning and ethnic food

Specialty Foods

These units are for members who want to gain more skills in cooking. Learning experiences:

Units 5, 6 & 7

Unit 5 is for members 8-18 years old. Units 6 & 7 are for members 11-18 years old. Learning experiences:

- Master the art of cooking over an open fire
- Learn dietary patterns and cooking techniques of ethnic, cultural, and foreign countries

Units 1 – 4 Food Preservation

Units 1, 2 & 3 are for members 8-18 years old. Unit 4 is for members 11-18. Learning experiences:

- Learn how to safely dry & freeze foods while maintaining top quality
- Learn how to safely preserve the following by boiling water canning: fruits and fruit spreads, tomatoes, and pickles
- Learn how to safely preserve the following by pressure canning: tomato products, vegetables and meats

HERITAGE ARTS

Crochet, Knitting, Needle Arts, Quilting, Misc. Fiber Arts, and Misc. Non-Fiber Arts. This project is for members 8-18 years old.

Crochet

Learning experiences:

- Create a crochet item that connects you to the past
- Unit 1 – Learn about the history of crochet, use single crochet stitch
- Unit 2 – Learn about yarn substitution, add half double, double, treble, or color work skills
- Unit 3 – Learn about blocking and finishing, utilize any stitch type
- Gain skills that might lead to a home-based business

Knitting

Learning experiences:

- Create a knitted item that connects you to the past
- Unit 1 – Learn about the history of knitting, Stockinette and/or Garter stitch
- Unit 2 – Learn about yarn substitution, add lace, cable, or color work skills
- Unit 3 – Learn about blocking and finishing, utilize any stitch type
- Gain skills that might lead to a home-based business

Fiber and Non-Fiber

Learning experiences:

- Learn about the history of the fiber or non-fiber chosen material
- Create an item that connects you to the past

- Learn about the historic influence that the fiber has had
- Gain skills that might lead to a home-based business

Quilting

Learning experiences:

- Learn about the history of quilting
- Create a quilted item that connects you to the past
- Learn about the historic influence that quilted items have had
- Gain skills that might lead to a home-based business

HOME DESIGN & DÉCOR

Unit 1 Home Design & Décor

This project is for members 8-18 years old. Learning experiences:

- Learning about the use of color, texture, line and design
- Recognize beauty in natural products
- Discover personal space
- Create useful household items

Unit 2 Home Design & Décor

This project is for members 8-18 years old. Learning experiences:

- Learning about safety by preparing a family safety plan
- Create useful household items
- Learn about the environment and how to recycle or reuse
- Discover how personal space differs from the space of others

Unit 3 Home Design & Décor

This project is for members 8-18 years old. Learning experiences:

- Prepare for severe weather
- Learn about the choices and how it affects design
- Learn about repairing furniture
- Learn how to refinish or restore an item
- Learn how to upholster

Unit 4 Home Design & Décor

This project is for senior members 14-18 years old.

Learning experiences:

- Build on skills learned in Units 1-3
- Make their own project and evaluate it
- Plan and develop an area to explore more deeply
- Create a quality exhibit