UC
CE

Animal Husbandry

This We Believe:

- The boy and girl are more important than the projects.
- The member should be their own best product.
- No award is worth sacrificing the reputation of a member or leader.
- Competition is a natural human trait and should be recognized as such. It should be given no more emphasis than other fundamentals.
- Learning how to do the project is more important than the project itself.
- Many things are caught rather than taught.
- A blue ribbon member with a red ribbon project is more desirable than a red ribbon member with a blue ribbon project.
- To learn by doing is fundamental in any sound educational program.
- Generally speaking, there is more than one good way of doing most things.
- Every member needs to be noticed, to feel important, to win, and to be praised.
- Our job is to teach members *how* to think, not what to think.

ANIMAL HUSBANDRY & VETERINARY SCIENCE

PAPER-I

SECTION-A

A. Animal Nutrition:

1. Energy Nutrition: Energy sources, energy metabolism. Requirement of energy for maintenance and Production of milk, meat, eggs and work energy evaluation of foods.

2. Protein Nutrition: Sources of protein, digestion and metabolism of protein, evaluation, requirements of protein for maintenance and production, Energy protein ratio in a ration.

3. Mineral Nutrition: Sources function, deficiency symptoms, requirement for animals and their relationship with vitamins.

4. Vitamins: Sources function, deficiency symptoms, requirements and interrelationship with minerals feed additives.

5. Applied Nutrition: Evaluation of feeding experiments, digestibility and balance studies. Feeding standards measures energy and proteins for ruminants and unruminants, Nutrient requirement for growth, Maintenance and production, Balanced ration.

6. Ruminant Nutrition: Nutrient and their metabolism with reference to milk production and its composition. Nutrient requirements and feed formulation for calves, heifers, dry and milking cows and buffaloes.

7. Non-ruminant Nutrition: Nutrient and their metabolism with special reference to meat an egg production. Nutrient requirements and feed formulation for layer, broiler and pig.

8. Common Feeds and Fodders and their Nutrition: Characteristic for hill region. Conventional and non-conventional feeds.

B. Animal Physiology:

1. Growth and Animal Production: Parental and Post natal growth, maturation, growth curves, measures of growth, factors affecting growth, body composition and meat quality.

2. Milk Production: Hormonal control of mammary development. Milk secretion and milk ejection, composition of milk of cows and buffaloes.

3. Animal Reproduction: Male and female reproductive organ, their components and functions.

4. Digestive Physiology: Organs of digestion and their functions. Digestion of carbohydrates, protein and fat in ruminants and non-ruminants.

5. Environmental Physiology: Physiology relations and their regulation mechanism of adaption, environmental factors and regulatory mechanism involved in animal behaviour. Method of controlling climatic stress.

6. Semen Quality Preservation and Artificial Insemination: Components of semen, composition of spermatozoa, physical and chemical properties of ejaculated semen, semen preservation, composition of dilutents. Sperm concentration, transport of diluted semen, deep freezing techniques.

SECTION-B

C. Livestock Production and Management:

1. Commercial Dairy Farming: Comparison of dairy farming in India with advanced countries. Dairying under mixed farming and as specialized farming, economic dairy farming, starting of dairy farm capital and land requirements, organization of dairy farms, procurement of goods, opportunities in dairy farming, factors determining the efficiency of dairy animals, herd recording, budgeting, cost of milk production, pricing policy, personnel management.

2. General Managements: Managements of livestock (Pregnant and milking cows, newly born calves), livestock records, principles of clean milk production, economics of livestock farming Housing for livestock and poultry. General problems of sheep, goat, pigs, rabbits and poultry management

3. Feeding Management: Developing practical and economic rations for dairy cattle, supply of green fodder throughout the year, Land and fodder requirement of dairy farms, feeding regimes for dry, young stock, bulls, heifers and breeding animals.
4. Management of Animals under Drought Conditions: Feeding and management of animal under drought, flood and other natural calamities.

D. Milk and Milk Products Technology:
1. Milk Technology: Organization of rural milk procurement, collection and transport of raw milk. Quality, testing and grading of raw milk. Quality, storage, grade of whole milk, skimmed milk and cream. Processing, packing, storing, distributing, marketing defects and their control and nutritive properties of the following milk. Pasteurized, standardized, Toned, double toned, sterilized, homogenized, reconstituted, recombined and flavoured milk. Culture and their management, Yoghurt, Dahi, Lassi, srikhand, legal standards, sanitation, requirement for clean and safe milk and for the milk plant equipments.

2. Milk Product Technology: Section of raw materials, assembling, production, proces ing, storing, distributing and marketing milk products such as butter, ghee, khoa, chenna, cheese, condensed, evaporated, dry milk, baby food, icecream and kulfi. Testing, grading, judging of milk products. BIS and Agmark specification, legal standards, quality control and nutritive properties. Packing, processing and operational control cost.
3. Milk Byproducts Technology: Whey products, butter milk, lactose and casein.
4. Import and Export of Livestock and Livestock Products.

PAPER-II
SECTION-A

A. Genetics and Animal Breeding:
1. Animal Genetics: Mitosis and meiosis, Mendelism inheritance, deviations to Mendalian genetics, Expression of genes, Linkage and crossing over, sex determination, sex influenced and sex limited characters, Blood groups and polymorphism, chromosomal aberrations, Gene and its structure, DNA as a genetic material, Genetic code and protein synthesis, Recombination DNA technology, mutation-type of mutations methods for detecting mutations and mutation role.
2. Population Genetics Applied to Animal Breeding: Quantitative Vs qualitative traits, Hard weinbery law, Population Vs Individual, Gene and genotype frequency. Forces charging gene frequency, random drift and small population, Inbreeding, methods of estimating inbreeding co-efficient, systems of inbreeding. Effective population size, Breeding value, estimation of breeding value, dominance and epistatic deviation, partitioning of variation, genotype environment correlation and genotype environment interaction.
3. Breeding System: Heritability, repeatability and genetic and phenotypic correlation their methods of estimation and precision of estimates. Aids to selection and their relative merits, individual, pedigrea, family and within family selection progeny testing, method of selection, basis of selection response to selection and its measure, selection differential sireinder, selection index, recurrent and reciprocal recurrent selection, establishment of new breed, inbreeding, out breeding, upgrading hybridization, crossbreeding, out crossing. Approach to livestock breeding policy for hill areas.
B. Health and Hygiene: 1. Anatomy of ox and fowl. Histological techniques. Freezing, paraffin embedding etc. Preparation and staining of blood film. 2. Common histological stain and embryology of cow. 3. Physiology of blood and its circulation, digestion, respiration, excretion, endocrine gland in health and diseases. 4. General knowledge of Pharmacology and therapetics of drugs. 5. Veterinary hygiene with respect of water, air and habitation environmental hygiene. 6. Milk hygiene, meat hygiene.

SECTION-B

C. Animal Diseases:

1.Immunity and Vaccination: Approach to disease management. Quarantine Types of immunity and vaccines Principles and methods of immunization of animals against specific diseases, herd immunity, disease free zones, zero disease concept, chemoprophylaxis.

2. Diseases of Cattle, Buffalo, Sheep and Goats: Etiology, symptoms, diagnosis, prevention and control and treatment of the following diseases: Metabolic diseases Mineral deficiency disease of livestock: Plant and other toxicities Anthrax, haemorrahagic septicaemia, black quarter, mastitis, tuberculosis, Johnes diseases, Foot and mouth diseases, Rinderpest rabies, piroplasmosis, Trypnasomiasis Faciolisis tympanitis. Diseases of new born calf.

3. Disease of Poultry: Etiology, symptoms, diagnosis, prevention, control and treatments of Ranikhet disease, Fowl pox, Avian leacosis complex. Marek's disease and gumboro disease.

4.Disease of Swine: Swine fever, Hogcholera.

5.Disease of Dog: Canine distemper, parvo diseases, Rabies in pets in relation to human health.

D. Veterinary Public Health:

1. Zoonoses: Classification, definition, role of animals and birds in transmission of zoonotic diseases. Zoonotic diseases caused by various agents and their control.

2. Veterinary Jurisprudence: Rule and regulations for improvement of animals quality and prevention of animal diseases. Materials and methods for collection of samples for veterolegal investigation. Presentation of cruelity to animals.

3. Duties and role of veterinanian in slaughter house to provide meat that is produced under ideal hygienic conditions.

4. Byproducts from slaughter houses and their economic utilization.

5. Method of collection, preservation and processing of hormonal glands for medicinal use.

E. Extension: Basic philosophy, objectives, concept and principles of extension, different methods adopted to educate farmers under rural conditions. Generation to technology, its transfer and feed back. Problems and constraints in transfer of technology. Animal husbandry to programmers for rural development.

4-H Animal Science – Large Animal Breeding Project Record

Name		4-H Age	
Primary Club Name			
Years in 4-H		Years in this Project	

I have completed this record and believe all information to be complete and accurate.

Member's Signature _____ Date _____ Parent's Signature _____ Date _____

Please indicate your Animal Science Project Area

☐Beef (Breeding) ☐Goat (Meat Breeding) ☐Goat (Dairy Breeding) ☐Horse (Breeding)
☐Sheep(Breeding) ☐Swine (Breeding)

What goals did you set for your project this year and did you achieve them?
1.
2.
3.

What were two things you learned from completing this project this year?
1.
2.

What is one thing you would like to improve or do differently with your project next year?

Life Skills

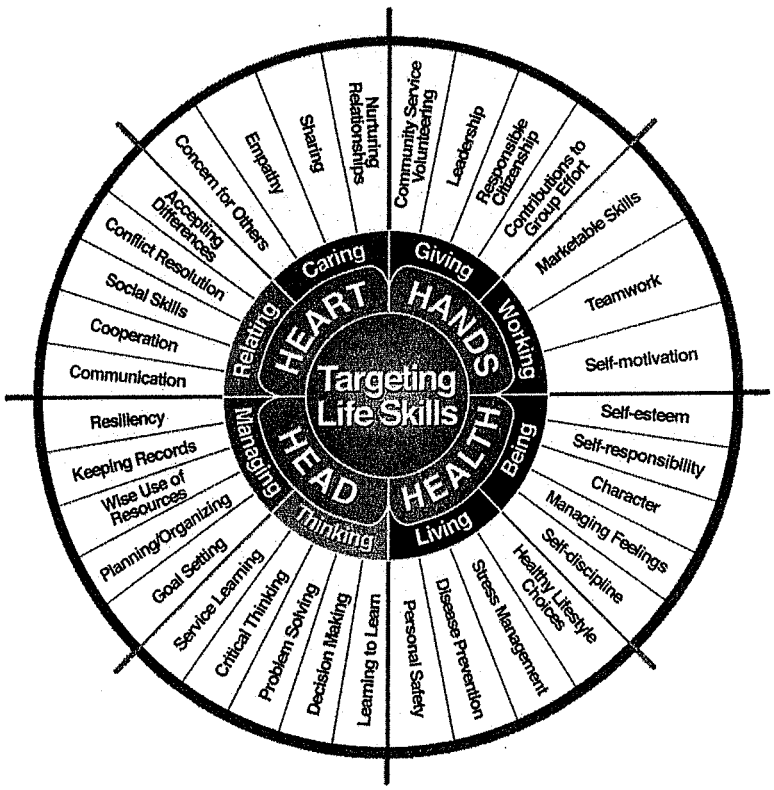
Describe the Life Skills you used and what you learned in relation to your project.

Example Table

I used one or more of these Life Skills from the Targeting Life Skills Wheel	What I learned as a result of using this skill.
HEAD *Example: Decision Making*	*I learned that I needed to be sure to budget my money when purchasing my rabbit projects so I would have enough to cover all of my expenses.*
HEART *Example: Sharing*	*I learned how to give younger 4-H members pointers on how to fit and show their animals properly.*
HAND *Example: Healthy Life Choices*	*I learned that animals don't grow well unless they receive the proper food.*
HEALTH *Example: Managing Feelings*	*I learned to control my feelings when I became frustrated that my pig would not cooperate to get loaded on the trailer*

I used one or more of these Life Skills from the Targeting Life Skills Wheel	What I learned as a result of using this skill.
HEAD	
HEART	
HAND	
HEALTH	

The diagram below shows many of the Life Skills learned in 4-H:



Project Activities

Include: Field Trips, Skillathon, Judging, Workshops, Quality Assurance, Class Participation, etc.
All project activities listed should be about this project area only.

Date	Name of Activity/Event	Location (School, Club, County, Regional, State, National etc.)

Project Communications

All project communications listed should be about this project area only.

Date	Type of Communication (Speech, Demonstration, Visual Presentation, etc.)	Title	Location (School, Club, County, Regional, State, National etc.)

Project Exhibits

Include: Fairs, Shows, Community Events, etc.
All project exhibits listed should be for projects in this area only.

Date	Exhibit	Location/Event	Placing (if applicable)

Table 1: Project Animal Information

Animal Name/ Tag #/Tattoo	Breed	Sex	Date of Birth	Dam	Sire	Cost
					Total Cost of Animal Projects Purchased	

Table 2: Animal Breeding Information

(only include those who are breeding age)

Animal Name/ Tag #/Tattoo	Date Bred	Date Gave Birth	Number Born	Number Weaned	Type of Breeding (N-Natural, AI-Artificial Insemination, ET- Embryo Transplant)	Sire

Table 3: Offspring Record

Animals born as a result of animal breeding information in Table 2

Animal Name/ Tag #/Tattoo	Date of Birth	Dam	Sire	Birth Weight	Animal Status (sold, kept for breeding, died, etc.)

Table 4: Feed Expenses

Date Purchased	Type of feed (grain, mix, hay, supplement, pasture, silage)	$/lb (total cost divided by lbs)	Pounds (lbs)	Total Cost
		Total pounds and total feed costs		

Table 5: Health and Veterinary Expenses

(If leasing an animal, you still need to complete the health and veterinary expenses)

List practices & materials used to treat or protect your animals from parasites, illnesses, & diseases. Include veterinary examinations, health papers, treatments for illnesses or injuries, foot care, vaccinations, medications & dewormers etc.

Date(s) Treated	4-H Tag# / Animal ID	Reason for Treatment or Veterinary Visit	Treatment Given	Withdrawal Period		Cost
				Days	Date Completed	
			Total Health and Veterinary Expenses			

Table 6: All Other Expenses

(Equipment, Supplies, Etc.)

Date	Description of Item(s)	Cost
	Total All Other Expenses	

Table 7: Income Record

Income from sale of Offspring and/or Project Animal(s)

Date	Description of Income	Income $
	Total Income	

Table 8: All Other Income

Include all other income from project animal(s) including premiums, products (wool, soap, milk, etc.) , etc.

Date	Description of Income (sale of milk can be listed monthly)	Income $
	Total Income	

Table 9: Milk Record

(Dairy Animals Only)

Month	Pounds of Milk (approximate)	Month	Pounds of Milk (approximate)
		Total Milk Production	

Financial Summary: Please make sure to use the totals from the charts.

Determine how much money you made or lost on your project animals. You can determine your profit (or loss) by:

A. Add Income

1. Money received from sale of offspring and/or project animals (Table 7) $ _____

2. All Other Income (Table 8) $ _____

Total Income (A) $ _____

B. Add Expenses

1. Project Animal Costs (Table 1) $ _____

2. Feed Expenses (Table 4) $ _____

3. Health and Veterinary Expenses (Table 5) $ _____

4. All Other Expenses (Table 6) $ _____

Total Expenses (B) $ _____

Subtract B from A to get profit or loss Total $ _____ (profit or loss)

1.2013

I'm a 4-H Project Leader: Now What Do I Do?

How do I know who is in my project?

- Your club organizational leader will provide you with the names, addresses and phone numbers of the members enrolled in the project for which you are the leader.
- If you are working on the county level, contact the UCCE for the list of project members.
- The organizational leader may indicate to you if any of the youth have special needs. At your first project meeting, note any other youth that may have special needs.
- You may wish to consult with the parent or your 4-H Youth Development Agent as to how to work with a special needs child.

How often should I hold project meetings?

It is recommended you hold 4-6 meetings that each last 1½ to 2 hours in length. Some projects require more meetings or a longer meeting time to accomplish your goals. Some projects, such as leathercraft, may lend themselves to individual project work as members progress on their projects. In this case, you should hold several introductory meetings for all members and then set up a schedule of time for them to sign up for individual help.

When do I start?

Get started as soon as possible! Members' interest in a project is most keen when they are signing up for a project and when they get their project books.

How do I cover the cost of project meetings?

- There is a wide variety of means for covering the cost of project meetings. Some methods used include:
- Each member pays for their share of the expenses or provides a portion of the supplies.
- The club agrees to cover expenses using funds from their treasury. Approval in advance is needed for this.
- Members and leaders can solicit donations/supplies from area businesses.
- Sometimes funds from sources outside your club may be available to cover your project meeting costs.

How do I establish a project meeting schedule?

First, determine when you are available to work with project members. Then determine an initial project meeting date by consulting with your project members.

Thanks to 4-H Youth Development Programs, UW-Extension, Cooperative Extension for use of these materials.

Publicize the date using one of the following means:

- County and/or club newsletter
- Club meeting or leader association meetings
- Postcards or phone calls to project members

You may not be able to schedule an initial meeting that everyone can attend. Establish a time to meet with those unable to attend before you hold your second project meeting.

Where do I hold project meetings?

Typically project meetings are held at project leader homes, schools, or community buildings. For more information on facility adaptability and liability concerns contact your 4-H Youth Development Agent.

What safety precautions do we need to consider?

Consider the type of safety issues your particular project involves. Request and secure necessary safety items such as ear protection, eye protection and head protection.

How do I let others in my club or other clubs know I am a project leader?

Prior to enrollment ask for time on your club's meeting agenda to let families in your club know you're a project leader and to share some things the kids could do in the project if they enrolled in it. When the project materials are handed out, take the opportunity to inform or remind members that you are their project leader and set an initial meeting date with the group. If no one in your club is in your project, you may wish to offer your services to a neighboring club. Talk to your club organizational leader or county 4-H Youth Development agent about this opportunity.

How do I prepare for the first meeting?

You may want to establish a 4-H resource box where you keep your project materials and any additional resources you will be using. Take time to become familiar with your project literature and talk to others who were project leaders for this project to find out what activities the members enjoyed.

What should I do at the initial project meeting?

- At the initial project meeting, here are some ideas of what you might want to cover:
- Find out what the members want to learn and accomplish in the project. The project literature is an excellent source of ideas.
- Review the safety practices that members will need to follow.

Thanks to 4-H Youth Development Programs, UW-Extension, Cooperative Extension for use of these materials.

- Do an introductory activity related to the project so the members get to know one another
- Have a small project the members can complete and take home
- Talk about how the project meeting supplies will be paid for. Experienced leaders have found it easiest to charge a small fee to cover the cost of the expenses.
- Assess when members are available for additional meetings. You may wish to ask the parents or members to bring along their calendars of family activities.
- Encourage parents to participate in project meetings, especially the initial meeting.

What does a typical project meeting look like after the initial orientation?

Use the experiential learning model (found in the introductory pages of your Helper's Guide) to plan your project meeting. The project helper's guide will provide suggestions for designing a project meeting. Here are some suggestions for each section of the model:

Do

- Plan an activity to focus the project members on what they'll be doing today. Work on the project for that meeting.

Reflect

- Review the process completed
- Discuss what worked and didn't work.
- Talk about how any problems that arose were solved.
- Assist members in documenting their project work for inclusion in their record books/portfolios.

Apply

- Ask the project member the following questions:
- What else have you seen that is similar to this?
- How can you apply what you learned today to other situations?

What resources are available to help me?

- 4-H Project Literature – You will receive project literature through your 4-H club or the UW-Extension office. Typically there is a helper's guide and member literature for three to four levels.
- Other People in my Club & County – There are a number of people in your county who would be willing to share project ideas and tips with you.

Thanks to 4-H Youth Development Programs, UW-Extension, Cooperative Extension for use of these materials.

These include:

- Project leaders in other clubs
- County Staff
- Older youth who have been involved in the project

- Media Collection & Public Libraries – Additional resources can be obtained from the Cooperative Extension Media Collection. They have videos, skillathons, displays and resource packages available to support a variety of projects. There is a user fee per item you or your club will be responsible for. You can view their catalog at their website http://www.uwex.edu/ces/media/. Check with your local public library to find out what resources they may have or that you can obtain through inter-library loan.
- 4-H Website – Wisconsin 4-H is continually adding more information and activities to their website. Visit this site at www.uwex.edu/ces/4h/onlinepro/. You may wish to check out websites from other state 4-H programs also.
- Volunteer Leaders Conferences – Review each issue of your county's newsletter to learn about training sessions for project leaders offered by your county, district or at statewide events. Sessions focusing on new project literature are typically offered at the State 4-H Volunteer Leader Conference held every other year. Periodically statewide conferences focusing on specific project areas are offered in addition to sessions at the volunteer conferences. You can also exchange ideas with other leaders at statewide Field Day.
- Field Trips – Youth always enjoy the opportunity to see firsthand how things are done and how they work. Consider taking your project group on a field trip or tour of a local business or company to enhance their project experience. An example would be taking your dairy members to a cheese factory or your foods group to a local bakery.
- Local Experts – Bring in a local "expert" to share their ideas and experiences with your group. One example would be asking a Master Gardener to share information on choosing perennial or trimming shrubs at one of your project meetings.
- Magazines – Many leaders have found creative ideas to supplement those in the project literature in magazines they have or those at the public library.

Thanks to 4-H Youth Development Programs, UW-Extension, Cooperative Extension for use of these materials.

How can I incorporate activities not included in the project guide?

We encourage you to use the ideas in the project literature as they have been successfully used with youth. If you have some additional activities you would like to incorporate, consider the following criteria:

- Of interest to kids
- Developmentally appropriate
- Incorporate the experiential learning model
- Youth and adults are involved in determining what will be done
- Enhances the development of member life and project skills
- Research based source of content utilized

What is the relationship between project work and the county fair?

The County Fair is an opportunity for an independent evaluation of life and project skills a member learned through completing a project. County fair entries typically match the activities included in the project literature and may include other activities that are being emphasized in your county. One of your roles is to help maintain the focus of members and parents on the goal of 4-H, which is to develop blue ribbon kids. Talk with members about what they learned about each of their fair entries from the judging process. Help members celebrate their accomplishments regardless of the color of ribbon each project member received at the fair. This may be done through individual encouragement or at a meeting following the fair. While entering and displaying a project at the County Fair is the traditional method of public affirmation, there may be other means of exhibition such as a club tour, open house, community celebrations or others.

Who can I go to if I need someone to help me during the project meetings?

If you are leading beginning level project meetings, ask older members in the project to help you. This is a great leadership experience for them! Parents are another excellent source of help. Don't hesitate to ask them to stay for the meeting and be actively involved in their child's project work.

Thanks to 4-H Youth Development Programs, UW-Extension, Cooperative Extension for use of these materials.

ANIMAL HUSBANDRY

BINGO

Find someone who can sign a square acknowledging that they have done that or know the answer

Knows what can be done as a career	Has more than one animal as a pet of the same species	Knows how to properly groom their animal	Has taken care a group of livestock
Has witnessed a live birth of an animal	Has visited a dairy farm	Wants to be a veterinarian	Wants to get into research with animals

Depending on the size of group, limit the number of times a person can sign on the same sheet