4-H
Engineering Proficiency Program
A Member's Guide

OVERVIEW

The **4-H Engineering Proficiency Program** helps you learn what you need to know about your 4-H project.

There are five levels in the Project Proficiency Program. You may choose how many levels you wish to complete:

- **Level I – "Explorer"**, you begin to learn about many different aspects of your project.
- **Level II – "Producer"**, you practice and refine the many skills involved in your project area.
- **Level III – "Consumer"**, you become an experienced producer in your project area.
- **Level IV – "Leader"**, allows you to show your own leadership potential.
- **Level V – "Researcher"**, you carry out a demonstration or experiment on some aspect of Engineering and prepare a paper or portfolio.

As you work through the proficiency program, your leader will date each skill item as you complete it. When all items in a proficiency level are completed, your leader will sign the Certificate of Achievement. Take this form into the 4-H office. They will make a copy of the form for their files and give you the pin that you have earned for that level. Continue working on the levels until they are all completed!

KEEP IN YOUR RECORD BOOK

Date Completed

Project: _____

_____	1.	Identify five materials used in your Engineering project and give an example of how each is used.
_____	2.	Identify six pieces of equipment needed to produce items in your project.
_____	3.	Explain the difference between two pieces of equipment or materials used in your project.
_____	4.	Demonstrate how to handle knives or sharp objects safely.
_____	5.	Explain two common courtesies expected during project activities.
_____	6.	Describe three safety issues related to your project.
_____	7.	Demonstrate how to follow basic directions, step by step, in correct order.
_____	8.	Demonstrate how to replicate shapes, forms, and patterns.
_____	9.	Display an example of your Engineering project to project members and tell about how you made it.
_____	10.	Explain ten new terms that you have learned for this project.
_____	11.	Complete four items in this project.
_____	12.	Identify 5 different projects that you would like to make. Explore the cost, techniques, and materials required for each project. Make the project you feel you can complete.
_____	13.	Write down a list of the items needed and figure out how much it will cost to make one engineering project.
_____	14.	Demonstrate how "measuring" is used in your specific craft.
_____	15.	Explain how the skills or knowledge you have learned in this project can help you in the future.

Member Name: _____ Date: _____

Project Leader's Signature: Date:

ENGINEERING
Level II - Producer

Date Completed

Project: _____

_____ 1. Explain how to prepare wood before you bend it.

_____ 2. Participate in one field trip to a materials or equipment provider.

_____ 3. Describe the steps or process necessary to complete your project.

_____ 4. Explain how crossbeams affect a structure's strength.

_____ 5. Demonstrate five basic techniques you learned while completing this project.

_____ 6. Identify three locations where materials can be obtained or purchased.

_____ 7. Explain to others outside of your project group what you have learned.

_____ 8. Display your project at least once outside of your project meeting.

_____ 9. Make four different items for this project.

_____ 10. Experiment with two different techniques, materials, or methods, then tell which you prefer and why.

_____ 11. Describe the proper method for storing a finished project and for cleaning the equipment used to make the project.

_____ 12. Keep a record of cash expenses and at the end of the year compare your product(s) value to your expenses. Could you have purchased the item(s) for less?

_____ 13. Describe one mistake/error that you made in producing a product and what you did or could have done to correct or prevent it.

_____ 14. Show how you have changed or modified your project from the original pattern or design.

_____ 15. Help someone else by sharing your knowledge or by giving away a product from your project to show positive citizenship.

_____ 16. Describe two ways to keep a healthy work environment in this project.

Member Name: _____ **Date:** _____

Project Leader's Signature: **Date:**

ENGINEERING
Level III - Consumer

Date Completed

Project: _____

_____ 1. Invite a guest speaker to one of your meetings and introduce them to the group.

_____ 2. Contact a local, state, or national association or company related to your project and explain to your project group what this association/company has to offer to its members/customers and interested individuals.

_____ 3. Keep a personal reference library of literature that will be helpful in your project.

_____ 4. Take part in a demonstration or judging contest specific to your project.

_____ 5. Report the history of one aspect (origin, equipment, material, techniques, etc.) of your project.

_____ 6. Visit one craftsman in the community and report what you learned at your next project meeting.

_____ 7. Keep a record of costs, cash expenses, time and labor charges for each product made. At the completion of the specific item, compare your product's value to the total expense.

_____ 8. Describe four ways to save money and be economical in obtaining materials.

_____ 9. Describe at least four different types of gears and when you would use each of them.

_____ 10. Make a project that uses three different techniques and three different materials or types of equipment.

_____ 11. Alone or with your group, plan and complete a community service activity related to your project.

_____ 12. Give a demonstration about your project.

Member Name: _____ **Date:** _____

Project Leader's Signature: **Date:**

ENGINEERING
Level IV - Leader

Date Completed

Project: _____

_____ 1. Serve as Junior or Teen leader in this project for one year.

_____ 2. Assist younger members in making, selecting, and constructing a project.

_____ 3. Prepare teaching materials for use at a project meeting.

_____ 4. Develop and put on a judging event or train a junior team for a judging event.

_____ 5. Speak on a project-based subject before a group other than your 4-H project.

_____ 6. Assist at a local crafts fair, show, or You Make It Craft Expo.

_____ 7. Assist younger members in actually learning a specific technique in the project.

_____ 8. Develop your own special project related activity. Chart your progress, plan the activites, analyze successes and problems, and report on findings.

Member Name: _____ **Date:** _____

Project Leader's Signature: _____ **Date:** _____

ENGINEERING
Level V – Researcher

Date Completed

Project: _____

_____ 1. Report on the results of a demonstration comparing measurable differences in some aspect of your project. (experiment)

_____ 2. Prepare a paper of 300 words or more on one of the following topics:

- Evolution of techniques
- History of a specific method/product
- Markets and methods of marketing engineering products
- Resource utilization and/or conservation
- Development of an engineering process
- Effect/use of color, shape, form, pattern, etc.
- Other

_____ 3. Prepare a speech or illustrated talk to orally summarize your findings and present at a club or project meeting or other educational event.

Member Name: _____ **Date:** _____

Project Leader's Signature: _____ **Date:** _____

Certificate of Achievement

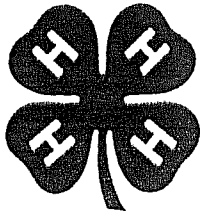
This certifies that

_____

has completed the _____ *Proficiency*

in _____ *County.*

Explorer	*Producer*	*Consumer*	*Leader*	*Researcher*
_____ *Date*	_____ *Date*	_____ *Date*	_____ *Date*	_____ *Date*
_____ *Leader's Signature*	_____ *Leader's Signature*	_____ *Leader's Signature*	_____ *Leader's Signature*	_____ *Leader's Signature*



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