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ABSTRACT

The curriculum guide consists of three courses of study in vocational agriculture at three different levels: (1) farmer training, (2) off-farm agriculture, and (3) pre-college preparation for professional careers in agriculture. The basic programs of study in agriculture 1 and 2 emphasize agricultural sciences, leadership, and exploratory work in farming and off-farm agricultural careers. The units of study are composed of goals, performance objectives, suggested activities and instructional materials, and references. The course of study for agriculture 3 and agribusiness 4 offers more specialized and advanced training. The major topics are: farm machinery sales and service, farm supplies and equipment, livestock and poultry, crops, forestry, and soil conservation, ornamental horticulture, wildlife and recreation, farm services, and agricultural service. These major topics are further subdivided into units consisting of goals, performance objectives, suggested activities and instructional materials, and references. (NJ)

CAREER ORIENTED CURRICULUM GUIDE FOR VOCATIONAL AGRICULTURE/AGRIBUSINESS

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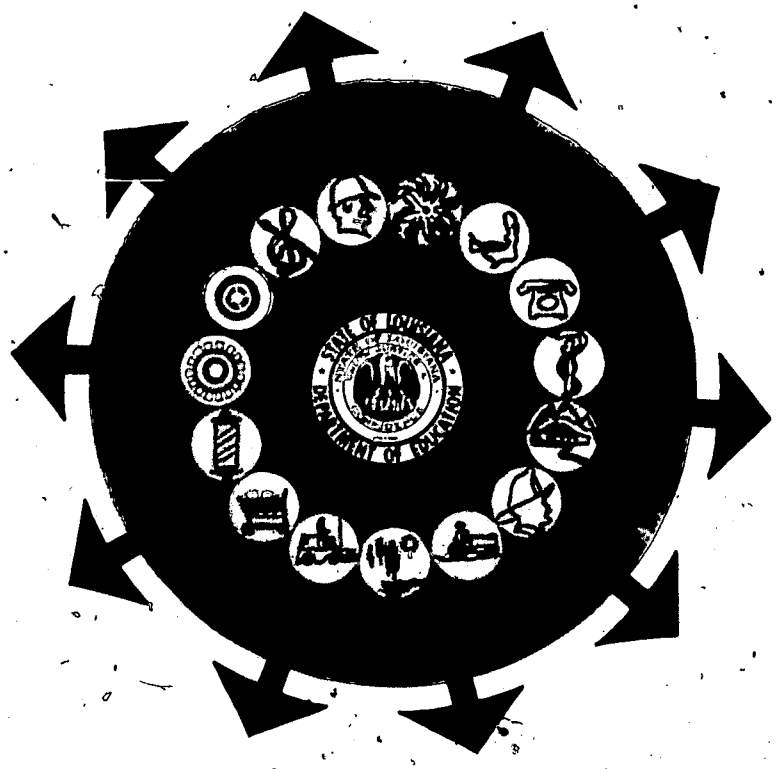

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LOUISIANA STATE DEPARTMENT OF EDUCATION

Louis J. Michot, Superintendent

1975

PREFACE

This curriculum guide grew out of a need for implementing career development programs in the field of agriculture and is designed to provide a uniform core of basic instruction recommended for all students of Vocational Agriculture and FFA in Louisiana. Its use should help to improve vocational agriculture instruction in Louisiana and serve as a guide for implementing the present techniques of instruction.

The information reproduced in this booklet represents the efforts of many people who gave of their time in planning and developing this outline. We especially express appreciation to the Parish School Superintendents and teachers of Vocational Agriculture for their many contributions toward this effort and feel the best thinking of many people has been solidified into a workable curriculum guide.

TABLE OF CONTENTS

INTRODUCTION

Career opportunities available to high school students of vocational agriculture include farm and off-farm agricultural industry and services. The program also recognizes the needs of students who plan to enter college in further preparation for careers in agriculture.

All students in vocational agriculture must develop career objectives based upon their interest and occupational outlook. In preparation for choices and career development, students are expected to participate in a two year basic program of studies. Major emphasis at the ninth and tenth grade levels is placed on the agricultural science, leadership, and exploratory work in farming and non-farm agricultural careers.

The basic program of studies, referred to as Agriculture I and Agriculture II is the foundation for more specialized training offered at the eleventh and twelfth grade levels. Students are required to have an occupational objective which qualifies them for entry into one of the three training options:

1. Farmer Training
2. Off-Farm Agriculture
3. Pre-College Preparation for Professional Careers in Agriculture

LOUISIANA VOCATIONAL AGRICULTURE PROGRAM

I. Basic Instructional Program for Youth at the 9th and 10th Grade Levels:

Vocational Agriculture Basic Areas of Instruction*	Suggested Hours Instruction Per Year	
	AG I	AG II
Orientation	8	8
Soil Science	16	16
Animal Science	24	24
Plant Science	32	24
Agricultural Mechanics	40	40
Basic Agricultural Economics	8	16
Agricultural Leadership (FFA)	16	16
Occupational Information	16	16
Supervised Occupational Experience**	6 mo. +	6 mo. +

*These areas of instruction are planned to prepare students for further vocational development at the 11th and 12th grade levels.

**An acceptable program in vocational agriculture shall include supervised occupational experience provided on the home farm, school farm or a facility approved by the school. This supervised experience shall extend over a period of not less than 6 months per year.

II. Agriculture III & IV (Areas of Specialization).
Specialized training under three options is provided beginning at the 11th grade level based upon student's career objective.

Option 1.

Farmer Training. Selection based on student's interest in one or more farm types: poultry, cotton, corn, dairy, tree farming, truck farming, soybeans, sweet potatoes, sugarcane, ornamentals, swine, rice, crayfish, catfish, small grain, hay and forage crops.

Option 2.

Off-farm Agriculture. Selection of one or more of eight occupational areas: Farm Service; Farm Machinery Sales & Service; Agricultural Service; Crops, Forestry & Soil Conservation; Livestock & Poultry; Ornamental Horticulture; Wildlife & Recreation; Farm Supplies & Equipment.

Option 3.

Pre-college preparation for professional careers in Agriculture. Research, education, industry, communications, conservation business service.

Suggested time allotments (hours) for either Option (1, 2, or 3) over the 2-year period:

	AG III	AG IV
Area of Specialization	104	104
Leadership (FFA)	16	16
Management	16	16
Agricultural Mechanics	24	24
Supervised Work Experience*	15 p/w	15 p/w

*Student pre-job work experiences are required to supplement classroom instruction.

FARMER TRAINING

The training of prospective farmers is still a major objective of vocational agriculture. Students with the occupational objective of farming are expected to make a choice of the farming type they expect to pursue. The choice will be limited to those found common to Louisiana and listed under Option 1. Students will follow a course of study prepared by the local teacher to include the experiences required for success with the type of farming chosen. The work in the classroom will be supplemented with supervised work in farming on the home farm, school farm or other acceptable farm. Work experiences should be relevant to the type of farming studied.

OFF-FARM AGRICULTURE

Providing training for students who desire to enter off-farm agricultural occupations is a major innovation in vocational agriculture. In Louisiana, agricultural occupations off the farm are found to exist in eight occupational areas. Occupational titles common to each area have been identified and described. Students may elect a particular occupational title as their training objective for instructional purposes. Available to the teachers are teaching aids comprehensive enough to include both teaching plans and necessary subject matter.

PRE-COLLEGE

The revised program offered takes into account the needs of youth who are college-bound in preparation for professional careers in agriculture. Their area of interest may be covered by further preparation in agricultural production, dealing with one or more farming types, or their interest may be better served by specialized training in one of the non-farm agricultural employment areas. To illustrate: a boy who desires to become a veterinarian should focus his attention on animal science. The work in the classroom must be supplemented with work experiences related to the agricultural profession for which further preparation is anticipated.

COOPERATIVE AGRICULTURAL EDUCATION (C.A.E.)

Junior and senior students must obtain realistic work experiences in selected agriculturally oriented businesses and firms. The students will be placed in these agencies where they will participate according to an individualized training plan developed by the teacher and a representative of the firm. Students will spend an average of 15 hours per week at the work station under the regular supervision of the teacher-coordinator. It is recommended that the school encourage this program by adjusting as much as possible the student's schedules to accommodate their work experience.

Agriculture III and IV students enrolled in this phase of the Vocational Agriculture Program may earn 3 units of credit for each year.

Schools wishing to participate in this program (C.A.E.) should request approval from the Vocational Agriculture Section of the State Department of Education.

AGRICULTURE LABORATORY CLASSES

The Agriculture Laboratory Unit may be offered in vocational agriculture programs where the need exists. The purposes of the Agriculture Laboratory Units are:

1. To provide individualized instruction for juniors and seniors who need and want advanced skill training.

2. To provide training for disadvantaged students who are juniors and seniors.

The student may earn one unit each in Agriculture Laboratory III and IV. (2 units)

It is recommended that these classes be limited in size in order to allow for individualized instruction where possible.

ADULT AND YOUNG FARMER INSTRUCTION

Classes of instruction for adults who wish to upgrade or improve their knowledge and skills shall be organized when the need for such instruction is indicated. The course must provide for either:

(1) a minimum of 10 class meetings with a total of not less than 20 hours instruction over a period of not less than 2 weeks with an average class attendance of not less than 8 students or

(2) a minimum of 20 class meetings with a total of not less than 40 hours of instruction over a period of not less than 4 weeks with an average class attendance of not less than 8 students. (Average class attendance for young farmers is 6.)

OFF-FARM ADULT AND YOUTH CLASSES

Special adult and youth classes in off-farm agricultural occupations may be organized to provide training for persons to enter a job or who wish to be upgraded in their present occupation. These classes shall be organized in such a manner and for sufficient duration to prepare the students to enter or advance in the labor market. Each course must have the prior approval of the Division of Vocational Education, State Department of Education, before the beginning of instruction.

FFA ACTIVITIES

An active FFA Chapter shall be maintained under the leadership of the Vocational Agriculture teacher who shall serve as Chapter Advisor. The FFA Chapter activities are an integral part of the instructional program in Agriculture Education. The activities are an effective means of motivating students in the classroom and in occupational training. Members learn through active participation how to conduct and take part in a public meeting, to speak in public, to solve their own problems, and to assume responsibility.

AGRICULTURE I

COURSE OF STUDY

Description: The basic program of studies in Agriculture I is part of the foundation for more specialized and advanced training offered at the 11th and 12th grade levels. Major emphasis at the 9th grade level is placed on the agricultural sciences, leadership and exploratory work in farming and off-farm agricultural careers. After completion of the basic program the student will be able to select a career objective.

The Agriculture I course of study consists of the following units of instruction:

UNIT I

ORIENTATION AND SUPERVISED WORK EXPERIENCE

GOALS

After completing this unit, which consists of approximately 8 hours of instruction, the student will have developed an understanding of the individual supervised experience program in vocational agriculture. The student will utilize this information to develop his supervised experience program and to help in choosing a career.

PERFORMANCE OBJECTIVES

After completing this unit, the student will be able to

I. Concerning developing the individual supervised experience program

A. Determine objectives for his individual supervised experience program.
B. Determine appropriate facilities for obtaining work experience.
C. Plan and establish work experience programs with cooperation of parents and teacher.
D. Determine which skills to perfect in work experience program.

SUGGESTED ACTIVITIES

I. The instructor will

A. Discuss goals and objectives relative to career entry.
B. Provide information sheets and study guides.
C. Provide examples of successful work experience programs.
D. Test and evaluate students.

II. The student will

A. Review information sheets and study guides.
B. Suggest activities to be included in experience program.
C. Be tested and evaluated.

INSTRUCTIONAL MATERIALS

I. Included in this unit

A. Information sheets and study guides
B. Examples of supervised experience programs
C. Tests

II. References

Phipps, Lloyd. Handbook on Agriculture Education in Public Schools. The Interstate Printers and Publishers, Inc., Danville, Illinois

UNIT II

AGRICULTURAL LEADERSHIP

GOALS

After completing this unit, which requires approximately 16 hours of instruction, the student will have developed fundamental qualities of agricultural leadership. He will also be familiar with the organization and history of the FFA.

PERFORMANCE OBJECTIVES

After completing this unit, the student will

I. Concerning the introduction to FFA

A. Be familiar with the history of the FFA.
B. Understand the aims and objectives of the FFA.
C. Be familiar with the creed, motto and purposes of the FFA.
D. Understand the responsibilities and duties of FFA officers.

II. Concerning leadership training

A. Be able to speak effectively before a group.
B. Be able to use parliamentary procedure in conducting a meeting.

SUGGESTED ACTIVITIES

I. The instructor will

A. Discuss goals and objectives relative to career entry.

B. Provide information sheets and study guides.
C. Demonstrate skills in public speaking and parliamentary procedure.
D. Take students to public meeting to observe parliamentary and speaking practices.
E. Test and evaluate students.

II. The student will

A. Review information sheets and study guides.
B. Demonstrate skills learned.
C. Go on field trip.
D. Be tested and evaluated.

INSTRUCTIONAL MATERIALS

I. References

Official Manual For Future Farmers of America. Future Farmers Supply Service, Alexandria, Virginia, 1970.

Stewart, Wilbur F. Helps in Mastering Parliamentary Procedure. Co-op Printshop, New Concord, Ohio.

UNIT III

OCCUPATIONAL INFORMATION

After completing this unit, which consists of approximately 16 hours of instruction, the student will be familiar with career opportunities that exist in the field of agriculture. This information will help the student in selecting a career.

PERFORMANCE OBJECTIVE

After completing this unit, the student will

I. Concerning the agricultural industry

A. Be aware of the broad scope of agriculture.
B. Be familiar with requirements for various careers in agriculture.

II. Concerning occupational training

A. Understand the personal and social competencies needed for employment.
B. Be familiar with the industry career kits, and the dictionary of occupational titles and descriptions.

SUGGESTED ACTIVITIES

I. The instructor will

A. Discuss goals and objectives relative to career entry.
B. Provide information sheets and study guides.
C. Provide booklets on agricultural occupations.
D. Have personnel manager of business speak to class.
E. Test and evaluate students.

II. The student will

A. Review information sheets and study guides.
B. Report on requirements of careers that interest him.
C. Be tested and evaluated.

INSTRUCTIONAL MATERIALS

I. Included in the unit

A. Information sheets and study guides
B. Booklets on agricultural occupations
C. Tests

II. References

Hoover, Handbook of Agricultural Occupations. The Interstate Printers and Publishers, Inc., Danville, Illinois, 1963.

UNIT IV

FARM MECHANICS

GOALS

After completion of this unit, which consists of approximately 48 hours of instruction, the student will have been introduced to the fundamentals of farm mechanics. The skills developed will enable the student to enter successfully the more advanced phases of farm mechanics and to apply these in his daily supervised experience program.

PERFORMANCE OBJECTIVES

Upon completion of this unit, the student will be able to

I. Concerning orientation

A. Understand the farm mechanics program.
B. Use and locate references.
C. Describe shop layout and procedures.
D. Identify, care and store tools correctly.
E. Understand and use safety procedures.

II. Concerning ropework

A. Identify and describe various knots, hitches and tackle.
B. Tie and use various knots, hitches and tackle.
C. Identify and select different types of rope.

III. Concerning farm plumbing

A. Identify and describe various kinds of pipes and fittings.
B. Cut and thread metal pipe.
C. Fit plastic pipe.
D. Use tools effectively.
E. Determine length to cut pipe.

IV. Concerning woodworking

A. Identify and use hand tools.
B. Identify and use nails, screws and other fasteners.
C. Apply basic mathematics relative to farm carpentry.
D. Utilize the procedures for constructing a small frame building.
E. Follow all safety precautions.

V. Concerning sheet metal and soldering

A. Measure and cut sheet metal.
B. Bend, shape and solder.
C. Follow all safety precautions.

VI. Concerning tool fitting

A. Identify and describe tools used.
B. Sharpen and reshape various tools.
C. Follow safety precautions.

VII. Concerning small engines

A. Identify and describe parts.
B. Describe the theory of operation.
C. Disassemble and reassemble engines.
D. Identify and describe the tools used.
E. Start, adjust and stop engines.
F. Service, trouble shoot and maintain engines.
G. Order replacement parts.
H. Prepare engine for storage.
I. Follow safety precautions.

SUGGESTED ACTIVITIES

I. The instructor will

A. Discuss goals and objectives relative to career entry.
B. Provide students with information sheets and study guides.
C. Use locally developed slides.
D. Demonstrate procedures in shop.
E. Demonstrate and discuss procedures outlined in information sheets and study guides.

F. Use charts and commercial literature.
G. Supervise shop work.
H. Test and evaluate.

II. The student will

A. Review information sheets and study guides.
B. Study goals and objectives.
C. View slides.
D. Study charts.
E. Demonstrate ability to perform skills.
F. Take test.

INSTRUCTIONAL MATERIALS

I. Included in this unit

A. Information sheets
B. Study guides
C. Slides from Briggs and Stratton
D. Charts from Briggs and Stratton
E. Shop equipment and tools
F. Other commercial literature
G. Test

II. References

Briggs and Stratton Repair Instructions II, Form MS 475054, Milwaukee, Wisconsin: Briggs and Stratton Corporation.

General Theories of Operation, Form MS 3553-31, Milwaukee, Wisconsin: Briggs and Stratton Corporation.

Gulf Farm Tractor Guide, SP 10293-R63, Houston, Texas: Gulf Oil Corporation, Gulf Building.

Long Kenneth F., Small Engine Service Manual. Sixth Edition. Kansas City 5, Missouri: Technical Publications, Inc: 1014 Wyandotte Street.

Jones, Mack. Shopwork on the Farm. New York: The MacMillan Company, 1960.

Wakeman, T.J. and Vernon Lee McCoy. The Farm Shop. New York: The MacMillan Company, 1960.

UNIT V

BASIC AGRICULTURAL ECONOMICS

GOALS

Upon completion of this unit, which consists of approximately 8 hours of instruction, the student will have been introduced to the fundamentals of agricultural economics. The skills developed will enable the student to enter successfully the more advanced studies of agricultural economics and to apply these in his daily supervised experience program.

PERFORMANCE OBJECTIVES

Upon completion of this unit, the student will be able to

I. Concerning introduction to farm management

A. Describe the meaning of farm management.
B. Describe the functions of management.
C. Use terminology.

II. Concerning principles of record keeping

A. Use terminology.
B. Explain the reasons for keeping various records.
C. Keep different types of records accurately.

SUGGESTED ACTIVITIES

I. The instructor will

A. Discuss goals and objectives relative to career entry.
B. Provide students with information sheets and study guides.
C. Have students work out management problems.
D. Demonstrate and discuss procedures outlined in study guides and information sheets.
E. Evaluate and test.

II. The student will

A. Review information sheets and study guides.
B. Study goals and objectives.
C. Demonstrate ability to perform skills.
D. Take test.

INSTRUCTIONAL MATERIALS

I. Included in this unit

A. Information sheets
B. Study guides
C. Record books
D. Sample problems
E. Test

II References

Shilt, Bernard and Harmon Wilson. Business Principles and Management. Fourth Edition. Cincinnati: Southwestern Publishing Company, 1961.

Hamilton, J.E. and W.R. Bryant. Profitable Farm Management. Englewood Cliffs: Prentice-Hall, Inc.

Beneke, R.R. Managing the Farm Business. New York; John Wiley and Sons, Inc. 1955

Efferson, J.N. Farm Records and Accounts. New York: John Wiley and Sons, Inc. 1949.

UNIT VI

SOIL SCIENCE

GOALS

After completion of this unit, which consists of approximately 16 hours of instruction, the student will have been introduced to the fundamentals of Soil Science. The abilities developed will enable the student to enter successfully the more advanced phases of soil science and to apply these competencies to his supervised experienced program.

PERFORMANCE OBJECTIVES

After completion of this unit, the student will be able to

I. Concerning soil formation

- A. Use terminology.
- B. Describe the composition of soil -- sources and content.
- C. Explain factors affecting soil formation.

II. Concerning soil properties

- A. Identify the physical properties of the soil.
- B. Explain the chemical and biological properties of soil.

III. Conerning soil acidity and liming

- A. Use terminology.
- B. Explain soil acidity and pH and their affect on plant growth and reproduction.
- C. Collect soil samples.
- D. Explain the purposes of liming and how it may be used to correct soil acidity.

SUGGESTED ACTIVITIES

I. The instructor will

- A. Discuss goals and objectives relative to career entry.
- B. Motivate through demonstration.
- C. Provide students with information sheets and study guides.
- D. Use audio visual aids.
- E. Demonstrate and discuss procedures outlined in information sheets and study guides.
- F. Test and evaluate.

II. The student will

- A. Review information sheets and study guides.
- B. Collect soil samples.
- C. Demonstrate ability to accomplish skills.
- D. Be tested and evaluated.

INSTRUCTIONAL MATERIALS

I. Included in this unit

A. Information sheets
B. Study guides
C. Audio-visual aids
   1. Films on soil formation
   2. Samples of soil
D. Test

II. References

Foster, Albert B. Approved Practices In Soil Conservation. Danville, Illinois. The Interstate Printers and Publishers, 1959.

Chapman, Paul W. and Thomas Roy H., Southern Crops. Turner E. Smith Book Company, Atlanta, Georgia.

UNIT VII

ANIMAL SCIENCE

GOALS

After completion of this unit, which consists of approximately 24 hours of instruction, the student will have been introduced to the fundamentals in animal science. The abilities devgloped will enable the student to enter successfully the more advanced areas of Animal Science and to apply these competencies to his supervised experienced program.

PERFORMANCE OBJECTIVES

After completion of this unit, the student will be able to do the following

I. Concerning types, breeds, and origin of livestock

A. Identify the types and breeds of livestock according to their characteristics.

II. Concerning methods of evaluating livestock

A. Identify parts of livestock.
B. Be familiar with classes and grades of livestock.
C. Select animals based on general appearance, pedigree, and progeny performance.
D. Select animals based on individual performance.
E. Understand and carry out procedures for fitting and showing livestock.

III. Concerning diseases and parasites of livestock

A. Name and describe livestock diseases and parasites.
B. Be familiar with the methods of controlling livestock diseases and parasites.
C. Recognize animals showing symptoms of diseases.
D. Treat livestock for parasites.

SUGGESTED ACTIVITIES

I. The instructor will

A. Discuss goals and objectives relative to career entry.
B. Conduct field trip to local farm to observe breeds of livestock.
C. Provide local developed slides to show animals common to the community.
D. Provide students information sheets and study guides.
E. Demonstrate and discuss procedures outlined in information sheets and study guides.
F. Test and evaluate.

II. The student will

A. Review information sheets and study guides.
B. Attend a field trip.
C. Demonstrate ability to accomplish skills.
D. Be tested and evaluated.

INSTRUCTIONAL MATERIALS

I. Included in this unit

A. Information sheets
B. Study guides
C. Pictures and charts
D. Test

II. References

Bundy and Diggins. Livestock and Poultry Production, Chapter 10.

Fowler, The Marketing of Livestock and Meat, Chapter 4

Ensminger. Animal Science, Chapter 15.

UNIT VIII

PLANT SCIENCE

GOALS

After completion of this unit, which requires approximately 32 hours of instruction, the student will have been introduced to the fundamentals of Plant Science. The competencies developed will enable the student to enter successfully the more advanced phases of plant science and to apply these in his supervised experience program.

PERFORMANCE OBJECTIVES

After completing this unit, the student will

I. Concerning growth processes of plants

A. Be able to identify and describe the parts of a plant.
B. Understand the process of photosynthesis.
C. Be able to describe how the plant takes up nutrients and how the nutrients affect plant growth.
D. Understand the effect of environmental factors on plant growth.

II. Concerning the classification of plants

A. Understand the classification of plants.
B. Be able to describe methods of plant reproduction.

III. Concerning propagation

A. Be able to describe methods of plant propagation.
B. Identify plants that reproduce by each method.

IV. Concerning cultural practices

A. Understand seedbed preparation and planting practices.
B. Be able to describe weed control methods.
C. Understand moisture control through cultural practices, drainage and irrigation.

SUGGESTED ACTIVITIES

I. The instructor will

A. Discuss goals and objectives relative to career entry.
B. Provide information sheets and study guides.
C. Use films, slides and charts that show practices being studied.
D. Take students on tour or field trip.
E. Have plant scientist talk to class.
F. Test and evaluate students.

II. The student will

A. Review information sheets and study guides.
B. Attend tour or field trip.
C. Demonstrate skills learned in studying the unit.
D. Be tested and evaluated.

INSTRUCTIONAL MATERIALS

I. Included in this unit

A. Information sheets and study guide
B. Samples of plant materials
C. Charts, slides or films
D. Tests

II. References

Edmond, J.B. Fundamentals of Horticulture. New York: McGraw-Hill Book Co. 1964.

Klingman, G. C. Crop Production in the South. New York: John Wiley and Sons, Inc., 1957.

Moon, Thupman, Paul Mann and James Otto. Modern Biology. New York: Henry Holt and Company, 1956.

Adriance, Guy W., and Brison, Fred. R. Propagation of Horticultural Plants. New York: McGraw-Hill Book Company, Inc., 1939.

AGRICULTURE II

COURSE OF STUDY

Description: The basic program of instruction in Agriculture II is part of the foundation for more specialized and advanced training offered at the 11th and 12th grade levels. Major emphasis in Agriculture II is placed on the agricultural sciences, leadership and exploratory work in farming and off-farm agricultural careers. After completion of the basic program, the student will be able to select a career objective.

The Agriculture II Course of Study consists of the following units of instruction:

UNIT I

ORIENTATION AND SUPERVISED WORK EXPERIENCE

GOALS

After completing this unit, which consists of approximately 8 hours of instruction, the student will have developed an understanding of the basic study program and the advanced program option in vocational agriculture. The student can use this information in choosing a career.

PERFORMANCE OBJECTIVES

After completing this unit, the student will

I. In orienting beginning students to the program in vocational agriculture

   A. Understand the importance of agriculture in Louisiana and in the nation.
   B. Understand the aims and objectives of the vocational agriculture program.

II. In orienting students to the basic and advanced programs in vocational agriculture

   A. Be familiar with the content of the course in vocational agriculture.
   B. Understand the training options in vocational agriculture designed to prepare students for their occupational choices.

SUGGESTED ACTIVITIES

I. The instructor will

A. Discuss goals and objectives relative to career entry.
B. Provide information sheets and study guide.
C. Have former FFA officer talk to classes.
D. Test and evaluate students.

II. The student will

A. Review information sheets and study guide.
B. Make charts showing types of agricultural opportunities in the area.
C. Be tested and evaluated.

INSTRUCTIONAL MATERIALS

I. Included in this unit

A. Information sheets and study guides
B. Charts
C. Films
D. Tests

II. References

Official Manual for Future Farmers of America, Future Farmers Supply Service, Alexandria, Virginia.

Bulletins from State Agriculture Department

Bulletins from State Education Department

Bulletins from Cooperative Extension Service

UNIT II

AGRICULTURAL LEADERSHIP

GOALS

After completing this unit, which requires approximately 16 hours of instruction, the student will have developed fundamental qualities of agricultural leadership. He will also be familiar with all of the various FFA activities.

PERFORMANCE OBJECTIVES

After completing this unit, the student will be able to

I. Concerning leadership training

A. Use parliamentary procedure in conducting a meeting.
B. Speak effectively before a group.

II. Concerning participation in FFA activities

A. Understand requirements of the degrees of active membership.
B. Train for contest activities.
C. Evaluate and plan chapter program of work.
D. Describe various state and national awards.
E. Submit applications for state and national awards.
F. Exhibit crops, livestock and projects effectively at local, state and national shows and fairs.

SUGGESTED ACTIVITIES

I. The instructor will

A. Discuss goals and objectives relative to career entry.
B. Provide information sheets and study guides.
C. Provide for a state FFA officer to speak to the class.
D. Use films of FFA activities.
E. Have chapter president talk to the class.
F. Test and evaluate students.

II. The student will

A. Review information sheets and study guides.
B. Discuss participation in FFA activities.
C. Prepare a list of FFA awards which he expects to achieve.
D. Be tested and evaluated.

INSTRUCTIONAL MATERIALS

I. Included in this unit

A. Information sheets and study guides
B. Films of FFA activities
C. Award applications
D. Booklets on judging contests
E. Tests

II. References

Official Manual for Future Farmers of America, Alexandria, Virginia: Future Farmers Supply Service, 1970.

Stewart, Wilbur F. Helps in Mastering Parliamentary Procedure. New Concord, Ohio: Co-op Printshop.

UNIT III

OCCUPATIONS INFORMATION

GOALS

After completion of this unit, which requires approximately 16 hours of instruction, the student will have an understanding of the personal and social competencies needed for occupational success.

PERFORMANCE OBJECTIVES

After completion of this unit, the student will

I. Concerning occupational training, placement and advancement

- A. Select a career objective.
- B. Understand personal and social competencies required for employment and job success.
- C. Be able to utilize resource materials for job opportunities.
- D. Be able to fill out application forms accurately.
- E. Be able to write a letter of application.

SUGGESTED ACTIVITIES

I. The instructor will

- A. Discuss goals and objectives relative to career entry.
- B. Provide students with information sheets and study guides.
- C. Demonstrate and discuss procedures outlined in information sheets and study guides.
- D. Invite an employer to speak to the class on social competencies.
- E. Test and evaluate.

II. The student will

- A. Review information sheets and study guides.
- B. Demonstrate ability to accomplish skills.
- C. Be tested and evaluated.

INSTRUCTIONAL MATERIALS

I. Included in this unit

A. Information sheets
B. Study guides
C. Resource materials on job opportunities in agriculture
D. Test

II. References

Hoovers. Handbook of Agricultural Occupations. Danville, Illinois: The Interstate Printers and Publishers, Inc., 1963.

UNIT IV

FARM MECHANICS

GOALS

After completion of this unit, which consists of approximately 55 hours of instruction, the student will have been introduced to the fundamentals of farm mechanics. The skills developed will enable the student to enter successfully the more advanced phases of farm mechanics and to apply these in his daily supervised experience program.

PERFORMANCE OBJECTIVES

Upon completion of this unit, the student will be able to

I. Concerning farm plumbing

A. Identify and describe various kinds of pipes, fittings and tools.
B. Determine and use appropriate pipes and fittings for a given job.
C. Follow all safety precautions.

II. Concerning woodworking

A. Identify and use power tools.
B. Construct various projects.

III. Concerning concrete

A. Use terminology.
B. Build forms.
C. Calculate material needs.
D. Select materials.

E. Mix and pour concrete.
F. Finish and cure concrete.
G. Use tools effectively.

IV. Concerning surveying

A. Use terminology.
B. Set up a transit.
C. Read a rod.
D. Record readings.
E. Use other methods in leveling a building.

V. Concerning acetylene welding, brazing and cutting

A. Use terminology.
B. Understand and follow safety procedures.
C. Identify and describe parts.
D. Assemble an acetylene rig.
E. Demonstrate acetylene welding, brazing and cutting techniques successfully.

VI. Concerning arc welding

A. Use terminology.
B. Understand and follow safety practices.
C. Identify and describe equipment.
D. Set up and operate welder.
E. Demonstrate fundamentals of arc welding.

VII. Concerning tractors

A. Use terminology.
B. Identify major components and controls.
C. Service and operate a tractor according to operator's manual.

SUGGESTED ACTIVITIES

I. The instructor will

A. Discuss goals and objectives relative to career entry.
B. Provide students with information sheets and study guides.
C. Use locally developed slides.
D. Use commercial literature.
E. Demonstrate the use of tools and equipment in the shop.
F. Emphasize the use of safety practices.
G. Demonstrate and discuss procedures outlined in study guides and information sheets.
H. Supervise show work.
I. Evaluate and test.

II. The student will

A. Review information sheets and study guides.
B. Study goals and objectives.
C. View slides.
D. Study charts and commercial literature.
E. Demonstrate ability to perform skills.
F. Take test.

INSTRUCTIONAL MATERIALS

I. Included in this unit

A. Information sheets and study guides
B. Catalogs and commercial literature
C. Locally developed slides
D. Shop tools and equipment
E. Test

II. References

Jones, Mack. Shopwork on the Farm. New York: The Macmillan Company, 1960.

Lincoln Arc Welding Teachers Manual, The Lincoln Electric Company, Cleveland, Ohio.

Phipps, McColly, Scranton and Cook. Farm Mechanics Test and Handbook. Danville, Illinois: The Interstate Printers and Publishers, 1959.

Theory and Practice of Arc Welding, R. J. Sacks, D. Van Nostrand Company, New York.

UNIT V

BASIC AGRICULTURAL ECONOMICS

GOALS

Upon completion of this unit, which consists of approximately 16 hours of instruction, the student will have been introduced to the fundamentals of agricultural economics. The skills developed will enable the student to enter successfully the more advanced studies of agricultural economics and to apply these in his daily supervised experience program.

PERFORMANCE OBJECTIVES

Upon completion of this unit, the student will be able to

I. Concerning analysis of farming types

- A. Describe the economic characteristics of modern American farming.
- B. Cite the types of farming areas in the United States and Louisiana.
- C. Analyze the factors affecting farming types.
- D. Recognize current trends in farming types in Louisiana.

II. Concerning principles of farm management

- A. Understand and explain the principle of supply and demand.
- B. Diagram supply and demand curves.
- C. Explain methods of computing interest.
- D. Compute interest and other cost of credit under various repayment plans.

III. Concerning prices and outlook

- A. Use marketing terminology.
- B. Locate and utilize marketing information.
- C. Explain marketing channels and services.
- D. Explain methods of marketing.
- E. Recognize factors that cause commodity price changes.

IV. Concerning agricultural policy

- A. Explain the fundamentals of Federal and State agricultural policies.
- B. Identify the agencies that administer various policy programs.
- C. Explain programs applicable to his area.

SUGGESTED ACTIVITIES

I. The instructor will

- A. Discuss goals and objectives relative to career entry.
- B. Provide students with information sheets and study guides.
- C. Have a representative of ASCS speak to class.
- D. Provide USDA marketing material.
- E. Demonstrate and discuss procedures outlined in study guides and information sheets.
- F. Evaluate and test.

II. The student will

- A. Review information sheets and study guides.
- B. Study goals and objectives.
- C. Demonstrate ability to perform skills.
- D. Take test.

INSTRUCTIONAL MATERIALS

I. Included in this unit

A. Information sheets
B. Study guides
C. USDA marketing information
D. Sample problems
E. Film, "Marketing Farm Products Abroad," 17 min., Louisiana Cooperative Extension Service
F. Test

II. References

Shilt, Bernard and Harmon Wilson. Business Principles and Management. Fourth edition, Cincinnatti: South-Western Publishing Company, 1961.

Hamilton, J. E. and W. R. Bryant. Profitable Farm Management. Englewood Cliffs: Prentice-Hall, Inc.

Beneke, R. R. Managing the Farm Business. New York: John Wiley and Sons, Inc., 1955.

"Financing a Farm Business," Louisiana Agricultural Extension Publication No. 1231, May 1958.

UNIT VI

SOIL SCIENCE

GOALS

After completion of this unit, which requires approximately 16 hours of instruction, the student will have been introduced to additional foundation materials in soil science. The abilities developed will enable the student to enter successfully the more advanced areas of soil science, and to apply these competencies to his supervised experienced program.

PERFORMANCE OBJECTIVES

After completion of this unit, the student will be able to

I. Concerning soil water

A. Explain the classification of soil water.
B. Understand the water holding capacity of soil.

II. Concerning soil fertility and fertilization

A. Use terminology.
B. Identify the sources and content of fertilizers.
C. Be familiar with the nitrogen cycle and how it increases soil fertility.
D. Describe the nutrient requirements of plants.
E. Recognize and correct plant food deficiency.
F. Be familiar with fertilizer application including time, method, placement and soil fertility maintenance.

III. Concerning soil classification and land use evaluation

A. Use terminology.
B. Be familiar with soil classes.
C. Describe the soil profile.
D. Classify land according to capability.

SUGGESTED ACTIVITIES

I. The instructor will

A. Discuss goals and objectives relative to career entry.
B. Provide students with information sheets and study guides.
C. Use audio-visual aids.
D. Demonstrate and discuss procedures outlined in information sheets and study guides.
E. Conduct tour to a site to observe soil classes and use.
F. Test and evaluate.

II. The student will

A. Review information sheets and study guides.
B. Go on tour.
C. Demonstrate ability to accomplish skills.
D. Be tested and evaluated.

INSTRUCTIONAL MATERIALS

I. Included in this unit

A. Information sheets
B. Study guides
C. Audio-visual aids
   1. Films
   2. Charts
D. Test

II. References

Gustafson, A. F. Using and Managing Soils. McGraw-Hill Book Company, New York and London, 1948.

Vanderford, H. B. Managing Southern Soils. John Wiley and Sons, Inc. 1957.

Stallings, J. H. Soil Use and Improvement. Prentice-Hall, Inc., Englewood Cliffs, New Jersey, 1957.

UNIT VII.

ANIMAL SCIENCE

GOAL

After completion of this unit, which requires approximately 24 hours of instruction, the student will have been introduced to additional foundation materials in animal science. The abilities developed will enable the student to enter successfully the more advanced areas of animal science, and to apply these competencies to his supervised experienced program.

PERFORMANCE OBJECTIVES

After completion of this unit, the student will

I. In anatomy and physiology of livestock

- A. Identify the types and functions of the organ systems of the body.
- B. Be familiar with component parts of the male and female reproduction tracts of livestock and poultry.
- C. Use terminology associated with the reproduction system.

II. In nutrition of livestock

- A. Use terminology.
- B. Be familiar with the classification and functions of feeds.
- C. Prepare a list of the sources of feed nutrients and classify them as high, medium or low content.

III. In the digestive process

- A. Use terminology.
- B. Be familiar with digestive process of livestock and poultry and its affect on growth and reproduction.
- C. Compare the digestive tracts of simple-stomach animals, ruminants and fowl.
- D. Make schemetic diagrams of different digestive tracts of animals.

IV. In preparation of rations

A. Use terminology.
B. Formulate simple rations.
C. Be familiar with the nutrient requirements of livestock and poultry.
D. Understand the characteristics of a good ration.

V. Concerning Principles of Breeding Livestock

A. Use terminology.
B. Understand the economic importance of reproductions.
C. Understand and select systems of breeding livestock.
D. Select a method of breeding.

SUGGESTED ACTIVITIES

I. The instructor will

A. Discuss goals and objectives relative to career entry.
B. Provide students with information sheets and study guides.
C. Use audio-visual aids.
D. Demonstrate and discuss procedures outlined in information sheets and study guides.
E. Conduct students to a slaughter house to observe the organ systems of animals.
F. Visit a feed mill to observe the preparation of rations.
G. Test and evaluate.

II. The student will

A. Review information sheets and study guides.
B. Go on field trips.
C. Audio-visual aids
   1. 16mm. motion picture: "The Story of the Rumen," 20 minutes. (Available from Louisiana Cooperative Extension Service, Baton Rouge, Louisiana)
   2. 16mm. motion picture: "Feeding Farm Animals." (Available from the above source)
   3. Charts or transparencies of the reproductive systems of livestock and poultry.
D. Be tested.

II. References

Bundy and Diggins. Livestock and Poultry Production. Chapter 3.

Dukes, H. H. The Physiology of Domestic Animals. Part IV.

Morris, F. B. Feeds and Feeding. Chapters 1-10.

UNIT VIII

PLANT SCIENCE

GOAL

After completing this unit, which requires approximately 24 hours of instruction, the student will have developed an understanding of the fundamentals of plant science. The competencies developed will enable the student to enter successfully the study of the more advanced phases of plant science and to apply these in his supervised experience program.

PERFORMANCE OBJECTIVES

After completing this unit, the student will

I. Concerning genetics

- A. Explain the principles of heredity.
- B. Describe plant breeding procedures.

II. Concerning sanitation and health

- A. Name the types of plant diseases.
- B. Explain the transmission of plant diseases.
- C. Describe the effects of diseases on plants.
- D. Use approved methods to control plant diseases.

III. Concerning insects that affect plants

- A. Identify types of common insects.
- B. Explain anatomy and life cycle of insects.
- C. Use approved methods of controlling insects.

IV. Concerning seed and plant selection

- A. Recognize quality seeds and plants.
- B. Identify varieties adapted to the area.

SUGGESTED ACTIVITIES

I. The instructor will

- A. Discuss goals and objectives relative to career entry.
- B. Provide information sheets and study guides.
- C. Take students on field trip.
- D. Test and evaluate students.

II. The student will

A. Review information sheets and study guides.
B. Go on field trip.
C. Demonstrate competencies learned.
D. Be tested and evaluated.

INSTRUCTIONAL MATERIALS

I. Included in this unit

A. Information sheets and study guides
B. Samples of plant materials
C. Charts, films and slides
D. Test

II. References

Snyder, L. H. and Paul R. David. The Principles of Heredity. Boston: D. C. Heath and Company, 1957.

USDA: Agriculture Yearbook of Plant Diseases. Washington, D. C.: Government Printing Office, 1953.

USDA: Agriculture Yearbook of Insects. Washington, D. C.: Government Printing Office, 1952.

USDA: Agriculture Yearbook of Seeds. Washington, D. C.: Government Printing Office, 1961.

FARM MACHINERY SALES AND SERVICE

Description: Careers prepared for in the Farm Machinery Sales and Service field are those requiring technical and professional skills that can be offered at the high school level. A high school vocational agriculture student will be given opportunities to receive training in farm mechanics, production problems and business management related to farm machinery sales and service. Students pursuing this training have previously selected this area as their career objective and the material is designed to prepare them for job entry in the field of Farm Machinery Sales and Service.

The Farm Machinery Sales and Service family consists of the following units of instruction:

UNIT I

METAL FUSION, FABRICATION, WELDING TECHNIQUES AND EQUIPMENT

GOAL

After completion of this unit, which consists of approximately 35 hours of instruction, the student will have developed an understanding of safety practices, welding equipment, and supplies. He will be able to perform advanced welding skills necessary for entry in careers in Farm Machinery Sales and Service. He will also have developed competencies in specialized welding jobs such as soldering, hardsurfacing, and brazing.

PERFORMANCE OBJECTIVES

Upon completion of this unit, the student will be able to do the following:

I. In the fundamentals and safe practice of welding

A. Demonstrate a knowledge of safety practices used in welding.

II. In selection, care, and use of welding equipment

A. Select appropriate equipment and machine.
B. Assemble welding equipment.
C. Conduct periodic checks of condition of equipment.

III. In identification of metals

A. Identify the different types of metals.
B. Demonstrate the procedures to follow for welding different types of metals.

IV. In classificiation and selection of electrodes

A. Identify types of electrodes and rods.

V. In fundamentals of a good bead

A. Adjust amperage settings.
B. Set and adjust oxyacetylene regulators.
C. Estimate correct arc length and current settings by sight and sound.
D. Run a good bead.

VI. In position welding

A. Prepare different types of joints for welding.
B. Demonstrate procedures for flat, vertical, horizontal, and overhead welding.
C. Fabricate projects.

VII. In cutting and piercing holes in metals

A. Use cutting equipment.
B. Cut different types of metals.

VIII. In cutting and welding pipes

A. Prepare pipes for welding.
B. Bend, lay-out, and weld pipes at different angles and joints.

IX. In methods of weaving the electrode

A. Position the rod correctly for weaving.
B. Develop the fundamentals of weaving.
C. Practice different weaving patterns.

X. In use of the carbon arc torch (soldering, hardsurfacing, brazing)

A. Demonstrate brazing and soldering with the torch.
B. Perform hardsurfacing of metals.

XI. In sketching and drawing

A. Make sketches and drawings.
B. Interpret sketches and drawings.
C. Read a blueprint.

SUGGESTED ACTIVITIES

I. The instructor will

A. Discuss goal and objectives relative to career entry.
B. Provide students with information sheets and study guides.
C. Use audio-visual aids.
D. Demonstrate and discuss procedures outlined in information sheets and study guides.
E. Provide samples of electrodes, rods, and fluxes.
F. Test and evaluate.

II. The student will

A. Review information sheet and study guides.
B. Demonstrate ability to accomplish skills in welding and fabrication.
C. Be tested and evaluated.

INSTRUCTIONAL MATERIALS

I. Included in this unit

A. Information sheet
B. Study guides
C. Audio-visual aids
D. Welding supplies and equipment
E. Test

II. References

Jones, Mack. Shop on the Farm, New York: The MacMillan Company, 1960.

The Welding Handbook, American Welding Society, New York, New York.

Farm Arc Welding, The Lincoln Electric Company.

Lincoln Arc Welding Teacher's Manual, The Lincoln Electric Company, Cleveland, Ohio.

Student's Guide for the Lincoln Short Course in Arc Welding, The Lincoln Company, Cleveland, Ohio.

Smith's Short Course for Gas Cutting, Welding, and Brazing, Education Department of Smith Welding Company, Division of TESCOM Corporation, Minneaspolis, Minnesota.

UNIT II

ASSEMBLY AND DEMONSTRATION OF AGRICULTURAL MACHINERY AND EQUIPMENT

GOAL

After completion of this unit, which consists of approximately 10 hours of instruction, the student will be able to assemble, adjust, service, and demonstrate machinery.

PERFORMANCE OBJECTIVES

Upon completion of this unit, the student will be able to

I. In machinery assembly

- A. Identify and assemble machinery.
- B. Interpret warranties.

II. In machinery adjustment

- A. Adjust machines for efficient operations.

III. In servicing machinery

- A. Read and understand the operator's manual.
- B. Service a machine.

IV. In demonstrating machinery

- A. Demonstrate a piece of machinery or equipment.

SUGGESTED ACTIVITIES

I. The instructor will

- A. Discuss goal and objectives relative to career entry.
- B. Motivate through demonstration.
- C. Provide students with information sheets and study guides.
- D. Conduct tour of a local farm machinery dealership.
- E. Use locally developed slides and visual aids.
- F. Demonstrate and discuss procedures outlined in information sheets and study guides.
- G. Test and evaluate.

II. The student will:

- A. Review information sheets and study guides.
- B. Go on planned tour.
- C. Demonstrate ability to accomplish skills in assembling and demonstrating equipment.
- D. Be tested and evaluated.

INSTRUCTIONAL MATERIALS

I. Included in this unit

- A. Information sheet
- B. Study guides
- C. Slides and charts
- D. Test

II. References

The Operation, Care, and Repair of Farm Machinery, 28th Edition, John Deere Company, Moline, Illinois, 1957.

Operator's and Service Manuals (Major machinery and implement dealers in your area).

Sampson, Mowery, and Kugler. Farm Shop Skills in Mechanized Agriculture, American Technical Society, Chicago, Illinois, 1955.

UNIT III

LUBRICATION, MECHANICAL POWER TRANSFER, AND HYDRAULIC POWER TRANSFER SYSTEMS OF AGRICULTURAL MACHINERY

GOAL

After completion of this unit, which requires approximately 45 hours of instruction, the student will have developed the ability to select and use lubricants effectively. He will describe the functions of the components of the mechanical power transfer systems. He will understand the operation and be able to use the hydraulic system.

PERFORMANCE OBJECTIVE

Upon completion of this, the student will be able to do the following

I. In functions of lubricants, grades and types of oils

- A. Explain terms associated with lubrications.
- B. Recognize oil by types and grades.

II. In the use of gear oils, grease and the lubricating procedures

- A. Change oil in a farm machine.
- B. Utilize knowledge of the procedures of oiling and greasing a machine.

III. In the functions of the clutch, transmission differential and the steering mechanism

- A. Dismantle and reassemble clutch and identify parts.
- B. Dismantle and reassemble transmission and identify the components.
- C. Identify and dismantle differential and final drive on different types of farm machinery.
- D. Dismantle and identify parts of steering mechanisms.
- F. Adjust brakes.

IV. In understanding belts, pulleys, the use of sprocket wheels, chains, and gears

- A. Identify types of belts, pulleys, sprockets, and chains.
- B. Replace sprockets and repair chains on agricultural machinery.
- C. Work problems involved in speeding up and slowing down machinery through the use of belts and pulleys.

V. In relationship of bearings to power transmission

A. Identify types of gears and bearings.

VI. In understanding basic hydraulic and its application to agricultural machinery

A. Demonstrate incompressibility of hydraulic fluids.
B. Disassemble hydraulic pumps and identify its parts.
C. Adjust pressure valves.
D. Repair hydraulic system.
E. Understand characteristics of hydraulic fluids and their effect on the system.

SUGGESTED ACTIVITIES

I. The instructor will

A. Discuss goal and objectives relative to career entry.
B. Provide students with information sheets and study guide.
C. Conduct tour to farm machinery mechanic shop.
D. Demonstrate and discuss procedures outlined in information sheets and study guides.
E. Test and evaluate.

II. The student will

A Review information sheet and study guides.
B. Demonstrate ability to accomplish skills relating to farm power and lubrication.
C. Attend planned tour.
E. Be tested and evaluated.

INSTRUCTIONAL MATERIALS

I. Included in this unit

A. Information sheet
B. Study guides
C. Wall charts
D. Test

II. References

The Operation, Care and Repair of Farm Machinery, John Deer Company, Moline, Illinois, 1957.

Henderson, G.E. and J. Howard Turner. Tractor Fuels and Lubricants. Athens, Georgia: Southern Association of Agricultural Engineering and Vocational Agriculture, Barrow Hall, University of Georgia, 1964 (Price $1.20).

Stone, A.S. and H.E. Guluin, Machines for Power Farming. New York: John Willy and Sons, 1957.

UNIT IV

ADJUSTMENT, MAINTENANCE AND REPAIR OF AGRICULTURAL EQUIPMENT

GOAL

After completion of this unit, which consists of 40 hours of instruction, the student will have developed an understanding of the adjustments, maintenance, and repairs needed for farm machinery which will prepare him for career entry in Farm Machinery Sales and Service.

PERFORMANCE OBJECTIVES

I. In adjustment, maintenance and repair of equipment

A. Adjust, maintain and repair tillage and planting machinery.
B. Adjust, maintain and repair spraying, dusting and fertilizing equipment.
C. Adjust, maintain and repair crop harvesting machinery.

SUGGESTED ACTIVITIES

I. The instructor will

A. Discuss goal and objectives relative to career entry.
B. Provide students with information sheets and study guides.
C. Demonstrate and discuss procedures outlined in information sheets and study guides.
D. Test and evaluate.

II. The student will

A. Review information sheet and study guides.
B. Demonstrate proficiency to accomplish skills.
C. Be tested and evaluated.

INSTRUCTIONAL MATERIALS

I. Included in this unit

A. Information sheet
B. Study Guides
C. Charts
D. Test

II. References

Operation, Care and Repair of Farm Machinery. 28th Edition, John Deere and Company.

Smith, Harris and Pearson. Farm Machinery and Equipment. New York: McGraw-Hill Book Company, 1964.

Stone and Guluin. Machines for Power Farming. New York: John Wiley and Sons, Inc., 1957.

UNIT V

ADJUSTMENT, MAINTENANCE AND REPAIR OF SMALL GASOLINE ENGINES

GOAL

After completion of this unit, which contains approximately 20 hours of instruction, the student will have the ability to adjust, service, repair, and operate small gasoline engines effectively. These competencies will enable him to enter careers in Farm Machinery Sales and Service.

PERFORMANCE OBJECTIVES

Upon completion of this unit, the student will

I. In the combustion system

A. Know the parts involved with compression.
B. Understand the four strokes of combustion.
C. Be able to recognize low compression and take steps to correct it.

II. In the ignition system

A. Know the parts of the ignition system.
B. Understand the principles of the ignition system.
C. Be able to troubleshoot and correct malfunctions.

III. In the carburetion system

A. Know the parts of the carburetion system.
B. Know the operation of different carburetors.
C. Understand the principles of the carburetion system.
D. Be able to troubleshoot and correct malfunctions.

IV. In the cooling system

A. Know the factors involved in cooling a small gasoline engine.
B. Understand the functions of oil, air, and water in cooling a small gasoline engine.
C. Be able to trouble shoot and correct malfunctions.

V. In overhauling small gas engines

A. Be able to determine need for overhaul.
B. Be able to grind and seat values.
C. Be able to resize a cylinder.
D. Be able to hone a cylinder.
E. Be able to replace parts.
F. Be able to reassemble and adjust each part effectively.

SUGGESTED ACTIVITIES

I. The instructor will

A. Discuss goal and objectives relative to career entry.
B. Motivate through demonstration.
C. Provide students with information sheets and study guides.
D. Use slides to show different mechanical procedures.
E. Disassemble an engine.
F. Supervise students during engine disassembly and reassembly.
G. Demonstrate and discuss procedures outlined in information sheets and study guides.
H. Evaluate and test.

II. The student will

A. Study information sheet and study guide.
B. Demonstrate ability to accomplish skills relating to servicing small motors.
C. Take test.

INSTRUCTIONAL MATERIALS

I. Instructional materials included in this unit

A. Information sheet
B. Study guide
C Slides
1. Operating Small Gas Engines - Briggs & Stratton
2. Troubleshooting Small Gas Engines - Briggs & Stratton
3. Overhauling An Engine - Briggs & Stratton
4. Storing Small Engines - Briggs & Stratton
D. Test

II. References

Briggs and Stratton Repair Instructions II, Form MS 4750-54, Milwaukee, Wisconsin: Briggs and Stratton Corporation.

General Theories of Operation, Form MS 3553-31, Milwaukee, Wisconsin: Briggs and Stratton Corporation.

Gulf Farm Tractor Guide, SP 10293-R63, Houston, Texas: Gulf Oil Corporation, Gulf Building.

Long Kenneth F., Small Engine Service Manual. Sixth Edition. Kansas City 5, Missouri: Technical Publications, Inc., 1014 Wyandotte Street.

UNIT VI

TRACTOR ENGINE SYSTEMS

GOAL

Upon completion of this unit, which consists of approximately 35 hours of instruction, the student will have the necessary fundamentals of diesel and gasoline tractor engines in order for him to enter careers in Farm Machinery Sales and Service.

PERFORMANCE OBJECTIVES

Upon completion of this unit, the student will:

I. In the area of gasoline tractor engine systems

A. Understand the principles of operation of the gasoline engine.
B. Understand the major components of the engine and their functions.
C. Understand the engine electrical systems.
D. Understand the operation of the fuel, air, and exhaust systems.
E. Understand the purposes and functions of the cooling systems.

II. In diesel engine systems

A. Understand the principles of operation of a diesel engine.
B. Understand the major components and their functions.
C. Understand the operation and function of the fuel system.
D. Understand the purposes and functions of the cooling system.
E. Understand the operation and functions of the air intake and exhaust system.

SUGGESTED ACTIVITIES

I. The instructor will

A. Discuss goal and objectives relative to career entry.
B. Motivate through demonstration.
C. Provide students with information sheets and study guides.
D. Use locally developed slides of tractors and their major systems.
E. Bring in and display engine models.
F. Demonstrate and discuss procedures outlined in information sheets and study guides.
G. Discuss operator's and maintenance manuals of various tractor companies.
H. Evaluate and test.

II. The student will

A. Study information sheets and guides
B. Demonstrate ability to accomplish skills in tractor operation.
C. Take test.

INSTRUCTIONAL MATERIALS

I. Instructional materials included in this unit

A. Information sheet
B. Study guide
C. Operator's manual
D. Maintenance manual
E. Locally developed slides
F. Models of diesel and gas engines
G. Test

II. References

Operation, Care, and Repair of Farm Machinery, John Deer and Company

Phipps, McColly, Scranton, and Coot. Farm Mechanics Text and Handbook, Sixth Edition. Danville, Illinois: The Interstand Printers & Publishers, 1964.

Kates, Edgar J. Diesel and High Compression Gas Engines, Chicago. American Technical Society, 1964.

Automotive Diesel Engines, Engineering Bulletin AD 206, Chicago: Standard Oil Company.

UNIT VII

TRACTOR MAINTENANCE AND OVERHAUL

GOAL

Upon completion of this unit, which consists of approximately 30 hours of instruction the student will be able to make adjustments on the valves, brakes, steering, and wheels. He will be able to tune-up the carburetion and ignition systems effectively. He will also have the competencies to carry out more extensive repairs on the engine, transmission, clutch, differential and power steering. The student's capability to determine and carry out tractor maintenance and overhaul will enable him to enter careers in Farm Machinery Sales and Service.

PERFORMANCE OBJECTIVES

Upon completion of this unit, the student will be able to

I. In tractor tune-up and maintenance

A. Understand the construction and major components of farm tractors.
B. Adjust valves.
C. Adjust the ignition system.
D. Adjust the air, fuel and exhaust system.
E. Adjust the brakes, clutch and steering mechanism.
F. Maintain the cooling system.
G. Service all systems.

II. In the repair and overhaul of tractors

A. Determine the extent of tractor repairs needed.
B. Repair a tractor engine.
C. Repair a tractor clutch.
D. Repair a transmission and differential.
E. Repair tractor brakes and power steering.

SUGGESTED ACTIVITIES

I. The instructor will

A. Discuss goal and objectives relative to career entry.
B. Motivate students through demonstration.
C. Provide students with information sheets and study guides.
D. Use slides and transparencies.
E. Plan and conduct a tour of a local farm machinery facility.
F. Demonstrate and discuss procedures outlined in information sheets and study guides.
G. Have a tractor mechanic speak to class.
H. Evaluate and test.

II. The student will

A. Review information sheets and study guides.
B. Read performance objectives.
C. Demonstrate ability to accomplish skills in tractor maintenance.
D. Go on tour of local facility.
E. Take test.

INSTRUCTIONAL MATERIALS

I. Instructional materials included in this unit

A. Information sheet
B. Study guide
C. Slides taken locally
D. Transparencies
   1. AAVIM transparencies
   2. Locally made transparencies
E. Test

II. References

Tractor Maintenance and Tune-Up, International Harvester Company, 180 North Michigan Avenue, Chicago 1, Illinois, 1962.

Ford Tractor Shop Manual, Tractor and Implement Division, Ford Motor Company, Dearborn, Michigan.

Henderson, G.E. and J. Howard Turner, Tractor Maintenance: Principles and Procedures. Southern Association Agricultural Engineers and Vocational Agriculture, Barrow Hall, Athens, Georgia, 1964.

Farm Tractors: Basic Principles, Operation, and Maintenance, Engineering Bulletin No. FT-53, American Oil Company, New York City, New York.

UNIT VIII

SOIL BREAKING AND SEEDBED PREPARATION

GOAL

Upon completion of this unit, which contains approximately 10 hours of instruction, the student will have the competencies to prepare a good seedbed and to plant crops by using the appropriate machines and equipment. This will help to qualify him for careers in farm machinery sales and service.

PERFORMANCE OBJECTIVES

Upon completion of this unit, the student will

I. In soil preparation (breaking)

- A. Be familiar with machinery and equipment used in soil breaking.
- B. Be able to operate soil breaking machinery and equipment.
- C. Know the procedures used in breaking soil.

II. In preparation of seedbed and planting crops

- A. Be able to select appropriate equipment for seedbed preparation and planting.
- B. Be able to operate equipment.
- C. Know the methods and procedures for seedbed preparation and planting.

SUGGESTED ACTIVITIES

I. The instructor will

- A. Discuss goal and objectives relative to careerentry.
- B. Motivate students through demonstration.
- C. Use locally developed slides of seedbed preparation and planting.
- D. Demonstrate and discuss procedures outlined in information sheets and study guides.
- E. Evaluate and test.

II. The student will

- A. Study information sheets and study guides.
- B. Study performance objectives.
- C. Demonstrate ability to perform skills in seedbed preparation.
- D. Take test.

INSTRUCTIONAL MATERIALS

I. Instructional materials included in this unit

- A. Information sheets
- B. Study guide
- C. Locally developed slides
- D. Models
- E. Test

II. References

Stallings. Soil Use and Improvement

Gustafson. Using and Managing Soils

Soils, 1957 USDA Yearbook

UNIT IX

FERTILIZERS AND FERTILIZATION

GOAL

After completing this unit, the student will be able to operate the equipment and machinery used in applying fertilizers. He will be able to service and maintain this equipment. The student will know how to apply the different fertilizers by using the appropriate equipment. The skills learned in this unit, which require approximately 10 hours of insturction, will help the student pursue a career in Farm Machinery Sales and Service.

PERFORMANCE OBJECTIVES

Completion of this unit will enable the student to

I. Concerning fertilizers and fertilization

- A. Understand the functions of the various components of fertilizing equipment and machinery.
- B. Properly maintain fertilizing equipment.
- C. Make proper decisions with respect to rate of application, time of application, and method of application of commercial fertilizers.

SUGGESTED ACTIVITIES

I. The instructor will

- A. Discuss goal and objectives with respect to career entry.
- B. Provide students with information sheets and study guides.
- C. Demonstrate use of fertilizer equipment.
- D. Test and evaluate.

II. The student will

- A. Review the information sheets and study guides.
- B. Operate and maintain fertilizer equipment.
- C. Participate in testing and evaluation.

INSTRUCTIONAL MATERIALS

I. Included in this unit:

A. Information sheets
B. Study guides
C. Fertilizer equipment
D. Operation manuals for fertilizer equipment
E. Tests

II. References

Cunnings, G.A. Fertilizer Placement Machinery for Southern Crops, Commercial Fertilizer Yearbook, 1941.

Herfnagle, R.W. "How to Adjust a Fertilizer Spreader," Successful Farming, November, 1952.

Methods of Applying Fertilizer, National Plant Food Institute, Washington, D.C., 1958.

UNIT X

INSECT AND DISEASE CONTROL

GOAL

Upon completion of the unit, which requires approximately 10 hours of instruction, the student will have mastered the skills concerning insect and disease control which will help him in pursuing a career in Farm Machinery Sales and Service. He will be able to identify insects and diseases and know the methods used to control them. The student will be able to operate and maintain equipment used in controlling diseases and insects.

PERFORMANCE OBJECTIVES

Completion of this unit will enable the student to do the following

I. Identify and classify insects and diseases.

II. Use approved methods of controlling insects and diseases.

III. Operate, maintain and service equipment used in controlling insects and diseases.

SUGGESTED ACTIVITIES

I. The teacher will

A. Discuss goal and objectives relative to career entry.
B. Provide information sheets and study guides.
C. Explain and demonstrate the operation of equipment used to control insects and diseases.
D. Provide students with samples of disease and insect damaged plants.
E. Explain and demonstrate methods of controlling insects and diseases.
F. Evaluate and test the students.

II. The student will

A. Review the information sheet and study guide.
B. Operate equipment used in the control of insects and diseases.
C. Use approved methods of insect and disease control.
D. Identify diseases and insect damage on plant specimens.
E. Participate in testing and evaluation.

INSTRUCTIONAL MATERIALS

I. Included in this unit

A. Samples of disease and insect damaged plants
B. Samples of pesticides
C. Collection of insects
D Information sheets and study guides
E. Tests

II. References

Melhus and Kent. Elements of Plant Pathology.

Klingman. Crop Production in the South.

Yearbook on Insects

UNIT XI

HARVESTING, PROCESSING, AND STORING FARM CROPS

GOAL

Upon completion of this unit, which requires approximately 5 hours of instruction, the student will understand the various methods in harvesting, processing, and storing farm crops and will be able to identify the proper machinery and equipment used under each method. These competencies will help the student secure employment in the field of Farm Machinery Sales and Service.

PERFORMANCE OBJECTIVES

After completing the unit, the student will be able to

I. Identify the machinery and equipment used in harvesting, storing, and processing farm crops.

II. Identify the various parts and functions of machinery and equipment used in harvesting, storing, and processing farm crops.

III. Select appropriate machinery and equipment used in harvesting, storing and processing farm crops.

SUGGESTED ACTIVITIES

I. The instructor will

A. Discuss goal and objectives relative to career entry.
B. Conduct a field trip to places where equipment and machinery may be demonstrated to class.
C. Use slides or charts to explain operation of the machinery and equipment.
D. Provide information sheets and study guides.
E. Test and evaluate students

II. The student will

A. Review information sheets and study guides.
B. Demonstrate ability to identify function of machinery and equipment used in harvesting processing and storing.
C. Participate in testing and evaluation.

INSTRUCTIONAL MATERIALS

I. Included in the unit

A. Slides and charts
B. Study guides and information sheet
C. Tests

II. References

The Operation, Care, and Repair of Farm Machinery, John Deere and Co.

Smith. Farm Machinery and Equipment.

Duncan. Food Processing.

UNIT XII

OPERATION OF AN AGRICULTURAL MACHINERY DEALERSHIP

GOAL

The completion of this unit will provide the student with the knowledge of the operation of an agricultural machinery dealership which would be helpful in securing entry into a career in Farm Machinery Sales and Service. The unit will require approximately 40 hours of instruction. The student will understand the organization of machinery dealerships. He also will understand the function of business management in the dealerships. The student will know the operating procedures of service departments and parts departments in agricultural machinery dealerships.

PERFORMANCE OBJECTIVES

After completing this unit, the student will be able to

I. Identify jobs and job functions within agricultural machinery dealerships.

II. Describe the methods of distributing agricultural machinery.

III. Effectively help with directing and coordinating functions of a machinery dealership.

IV. Work with the accounting systems of farm machinery dealerships.

V. Help with the selection and training of employees.

VI. Help customers in selecting equipment.

VII. Plan the use of labor.

VIII. Carry out service department operating procedures.

IX. Display and advertise farm machinery parts.

X. Carry out procedures in operating parts department.

SUGGESTED ACTIVITIES

I. The instructor will

A. Discuss goal and objectives relative to career entry.
B. Provide information sheets and study guides.
C. Provide floor plans of agricultural machinery dealerships.
D. Conduct field trips to local farm equipment dealerships.
E. Have parts, service and business managers discuss the organization of their departments with the class.
F. Test and evaluate students.

II. The student will

A. Review information sheets and study guides.
B. Make an organization plan of an agricultural machinery dealership showing floor space, employee functions, furniture, fixtures, and other items necessary to the operation of the business.
C. Participate in testing and evaluation procedures.

INSTRUCTIONAL MATERIALS

I. Included in this unit

A. Blueprints of farm equipment facilities
B. Slides showing different types of construction.
C. Charts showing organization of departments in machinery dealerships.
D. Information sheets and study guides.
E. Tests

II. References

Wilson, Leonard. Farm and Power Equipment Retailer's Handbook. St. Louis, Missouri: National Farm and Power Equipment Dealers Association, 1964.

Organization and Management of Machinery Dealerships, Module No. 1, The Center for Research and Leadership for Vocational and Technical Education, The Ohio State University; Columbus, Ohio.

Heiges, P. Myers, Arnold E. Schneider, and Harry Huffman. General Record Keeping. New York: Gregg Publishing Division, McGraw-Hill Book Company, Inc., 1959.

UNIT XIII

AGRICULTURAL SALESMANSHIP

GOAL

After completing this unit, the student will have developed the salesmanship abilities needed by persons preparing for a career in Farm Machinery Sales and Service. The unit requires about 5 hours of instruction.

PERFORMANCE OBJECTIVES

After completing this unit, the student will be able to

I. Concerning salesmanship

- A. Meet the customer.
- B. Present supplies and services to the customer.
- C. Overcome buyer resistance.
- D. Close a sale.

SUGGESTED ACTIVITIES

I. The instructor will

- A. Discuss goal and objectives relative to career entry.
- B. Provide information sheets and study guides.
- C. Have professional sales persons demonstrate sales techniques to the class.
- D. Show films illustrating sales techniques.
- E. Have students demonstrate sales techniques.
- F. Record practice sales techniques of students and play back for class.
- G. Test and evaluate students.

II. The student will

- A. Review information sheets and study guides.
- B. Practice sales techniques from films and resource persons.
- C. Participate in testing and evaluation procedures.

INSTRUCTIONAL MATERIALS

I. Included in this unit

A. Information sheets and study guides
B. Recordings of students sales techniques.
C. Films on sales techniques
D. Tests

II. References

Ernest and DaVall. Salesmanship Fundamentals. Second Edition. New York: McGraw-Hill Book Company, Inc.

Richert, Meyer and Haines. Retailing Principles and Practices.

"Salesmanship Series," 16mm Film, B & W, 1959. New York: McGraw-Hill Book Company, Inc.

UNIT XIV

HUMAN RELATIONS IN AGRICULTURAL OCCUPATIONS

GOAL

After completion of this unit, which contains approximately 10 hours of instruction, the student will have an understanding of the qualities necessary for career entry and employment advancement in agriculture careers.

PERFORMANCE OBJECTIVES

Upon completion of this unit, the student will

I. In occupations offering most promising employment opportunities.

A. Be acquainted with career opportunities in farm machinery sales and service.
B. Be able to self evaluate his attitudes, habits and personality characteristics as related to job entry.

II. In effective communication with prospective employers

A. Know the three major steps in getting a job.
B. Be able to communicate with prospective employees by using the letter of application and the personal interview.
C. Be able to live up to the social and educational competencies necessary for job success.

SUGGESTED ACTIVITIES

I. The instructor will

A. Discuss goal and objectives relative to career entry.
B. Motivate through demonstration

C. Provide students with study guides.
D. Use locally developed slides of persons actually working on different jobs.
E. Have a personnel director talk to the group.
F. Demonstrate and discuss procedures outlined in information sheets and study guides.
G. Evaluate and test.

II. The student will

A. Study information sheets and study guides.
B. Read and disucss performance objectives.
C. Demonstrate ability to accomplish skills by setting up interviews and writing letters of application.
D. Take test.

INSTRUCTIONAL MATERIALS

I. Instructional materials included in this unit

A. Information sheet
B. Letter of application
C. Data sheet
D. Study guide
E. Locally developed slides
F. Job application forms
G. Test

II. References

Hoover, Norman K. Handbook of Agricultural Occupations. Danville, Illinois: The Interstate Printers and Publishers, 1963.

Duncan, Clyde H. Find a Career in Agriculture. Danville, Illinois; The Interstate Printers and Publishers, 1961.

"Getting Along with Others," 16mm Film, 29 minutes, Business Education Film, 5113 16th Avenue, Brooklyn, New York.

"Your Attitude is Showing," 35 mm sound filmstrip, 12 minutes, Charles Steadman, Teacher-Trainer in Distributive Education, University of Pittsburgh, Pittsburgh, Pennsylvania.

FARM SUPPLIES AND EQUIPMENT

Description: Occupations in Farm Supplies and Equipment involves competencies and product knowledge in the merchandising of seed, feed, fertilizer, agricultural chemicals, equipment and similiar products. A high school vocational agriculture student will be given training for career entry in this field.

The Farm Supplies and Equipment family consists of the following units of instruction:

UNIT I

LIVESTOCK EQUIPMENT AND SUPPLIES

GOAL

After completion of this unit, which consists of approximately 15 hours of instruction, the student will be familiar with the wide range of livestock equipment and supplies carried by the agricultural supply businesses. He will be able to help provide customers with information concerning services derived from the use of various livestock equipment and supplies. This knowledge will qualify him for careers in Farm Supplies and Equipment.

PERFORMANCE OBJECTIVES

Upon completion of this unit, the student will

I. In vocabulary of livestock supplies and equipment

- A. Be able to identify items by name.
- B. Use and understand commercial literature.
- C. Know competitive brand names.
- D. Understand terminology of livestock equipment and supplies.

II. In services of livestock equipment and supply businesses

- A. Know the organization of a business and the functions of each department.
- B. Know the physical layout and location of merchandise.
- C. Know the quality and price of competitive brands.
- D. Be able to recommend appropriate merchandise to customers.
- E. Be able to explain safety precautions relative to merchandise.
- F. Be able to demonstrate and service merchandise.
- H. Be able to handle situations beyond his product knowledge by referral to supervisors or the service department.

SUGGESTED ACTIVITIES

I. The instructor will

A. Discuss goal and objectives relative to career entry.
B. Motivate through demonstration.
C. Provide students with information sheets and study guides.
D. Provide students with commercial literature such as catalogs and advertisments.
E. Use locally developed slides of merchandise displays.
F. Conduct a visit to a local store.
G. Demonstrate and discuss procedures outlined in information sheets and study guides.

II. The student will

A. Review information sheets and study guides.
B. Study performance objectives.
C. Demonstrate ability to perform skills.
D. Visit local store.
E. Compare quality and price of competitive brands using catalogs.
F. Take test and be evaluated.

INSTRUCTIONAL MATERIALS

I. Instructional materials included in this unit

A. Information sheets and study guides
B. Locally developed slides of merchandise
C. Catalogs
D. Test

II. References

Facts About Merchandise. William Logan and Helen Moore.

Displays Made Easy, Material Laboratory, Distributive Education Service, Ohio State University

Miscellaneous Agricultural Supplies and Small Equipment Sales and Service, Ohio State University, Columbus, Ohio, 43212.

Catalogs - NASCO, Brodhead, Garrett, Sears

Trade Magazines

UNIT II

OPERATION, MAINTENANCE AND REPAIR OF SMALL FARM ENGINES AND EQUIPMENT

Refer to: FARM MACHINERY SALES AND SERVICE -- UNIT II

UNIT III

AGRICULTURAL HARDWARE

GOAL

After completion of this unit, which consists of approximately 30 hours of instruction, the student will be able to utilize his working knowledge of building materials, small tools, and fencing materials to assist customers. He will be able to demonstrate, recommend and estimate material needs for agricultural construction. These competencies will help qualify him for careers in Farm Supplies and Equipment.

PERFORMANCE OBJECTIVES

Upon completion of this unit, the student will be able to

I. In building materials (lumber, paints, plumbing supplies, electrical supplies, nails, screws, bolts, and hinges)

- A. Identify and locate merchandise.
- B. Understand commercial literature and terminology.
- C. Understand the quality and price of competitive brand merchandise.
- D. Recommend appropriate merchandise to customers.
- E. Explain safety precautions relative to merchandise.
- F. Demonstrate and service merchandise.
- G. Estimate the amount of material needed for a given job.
- H. Handle situations beyond his product knowledge by referral to superiors or the service department.

II. In fencing

- A. Identify and locate fencing material.
- B. Understand different types and kinds of fencing.
- C. Recommend appropriate types of fence material to customers.
- D. Estimate the amount of wire and post needed for a given job.
- E. Handle situations beyond his product knowledge by referral to superiors.

III. In small tools

- A. Identify tools.
- B. Explain the uses of each tool.
- C. Display small tools.
- D. Recommend appropriate tools.
- E. Demonstrate and service tools.

SUGGESTED ACTIVITIES

I. The instructor will

A. Discuss goal and objectives relative to career entry.
B. Motivate through demonstration.
C. Provide students with information sheets and study guides.
D. Provide student with catalogs.
E. Use locally developed slides of merchandise displays.
F. Conduct a visit to a building materials supply company.
G. Demonstrate and discuss procedures outlined in information sheets and study guides.
H. Provide students with samples of building materials and supplies.
I. Evaluate and test.

II. The student will

A. Review information sheets and study guides.
B. Study performance objectives.
C. Demonstrate ability to perform skills.
D. Visit a local building material supplies.
E. Use catalogs and commercial literature.
F. Take test and be evaluated.

INSTRUCTIONAL MATERIALS

I. Instructional materials included in this unit

A. Information sheets and study guides
B. Locally developed slides of merchandise
C. Catalogs
D. Samples of building materials and tools
E. Commercial charts
F. Test

II. References

Phipps, McColly, Scranton, and Cook. Farm Mechanics Text and Handbook. Fourth Printing. Danville, Illinois: The Interstate Printers and Publishers, 1962.

Handbook for Fencing. Sears Roebuck and Company.

Wooley, J.C., Repairing and Constructing Farm Buildings. McGraw-Hill Book Company, Inc., New York.

UNIT IV

FEEDS

GOAL

After completion of this unit, which consists of approximately 20 hours of instruction, the student will understand the values of different feeds and how they meet livestock nutritional requirements. He will have a working knowledge of regulations governing the preparing, formulating, labeling and merchandising of feeds. These competencies will qualify him for employment and advancement in the livestock feed business.

PERFORMANCE OBJECTIVES

Upon completion of this unit, the student will be able to

I. In animal nutrition

A. Utilize his knowledge of the nutritional requirements of livestock.
B. Apply his knowledge of the basic functions of nutrients and feed additives.

II. In livestock feeds and their values

A. Classify feeds.
B. Understand the importance of balanced rations.
C. Evaluate feeds in terms of TDN
D. Utilize his knowledge of the sources of vitamins, minerals and proteins.
E. Understand the factors that affect the nutritional value of feeds.

III. In regulation of formulated feeds.

A. Utilize his knowledge of regulations which govern feed manufacturers.
B. Interpret information on feed labels.

IV. In grain rations

A. Formulate a balanced ration using various feed ingredients.

V. In methods to prepare and merchandise feed

A. Understand the reasons for feed preparation.
B. Recommend appropriately prepared feeds for different classes of livestock.
C. Use advertising ideas to promote feed sales.

SUGGESTED ACTIVITIES

I. The instructor will

A. Discuss goal and objectives relative to career entry.
B. Motivate through demonstration.
C. Provide students with information sheets and study guides.
D. Conduct a tour of local feed facility.
E. Demonstrate and discuss procedures outlined in information sheets and study guides.
F. Evaluate and test.

II. The student will

A. Review information sheets and study guides.
B. Study performance objectives.
C. Demonstrate ability to perform skills.
D. Visit local feed facility.
E. Take test.

INSTRUCTIONAL MATERIALS

I. Instructional materials included in this unit

A. Information sheets and study guides
B. Feed samples
C. Tags from commercial feeds
D. Copies of state and federal feed regulations
E. Test

II. References

Morrison F.B. Feed and Feeding. Ninth Edition. Ithaca, New York: The Morrison Publishing Company, 1956.

Better Feeding of Livestock, USDA Farmer's Bulletin No. 2052; Office of Information, Washington, D.C. 1952.

Mineral Feeding Facts. 1964-65 Edition. Chicago: Darling and Company, Union Stockyards.

Bundy, C.E. et. al. Livestock and Poultry Production, Second Edition. Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1961.

UNIT V

SEEDS

GOAL

After completion of this unit, which consists of approximately 25 hours of instruction, the student will have competencies and knowledge of the seed and plant material business. He will be able to advise customers regarding varieties, services, and problems of plant propagation. These competencies will help to qualify him for employment and advancement in the farm supplies and equipment area.

PERFORMANCE OBJECTIVES

Upon completion of this unit, the student will be able to

I. In seeds -- crop, lawn, and garden plant material and varieties.

A. Conduct sales of seeds and other plant materials with confidence.
B. Advise customers on the biology of plant propagation.
C. Recommend crop varieties.
D. Interpret information on seed tags and labels.
E. Advise customers of services offered by seed firms.
F. Recognize strong and weak points of the products offered by the employee's company and its competitors.
G. Recommend crop varieties.
H. Use catalogs and other source materials.
I. Aid customers to solve problems concerning seeds and plant materials.

SUGGESTED ACTIVITIES

I. The instructor will

A. Discuss goal and objectives relative to career entry.
B. Motivate through demonstration.
C. Provide students with information sheets and study guides.
D. Conduct a tour of a local seed facility.
E. Use locally developed slides of seed displays.
F. Provide seed samples for identification.
G. Demonstrate and discuss procedures outlined in information sheets and study guides.
H. Evaluate and test.

II. The student will

A. Review information sheet and study guide.
B. Study performance objectives.
C. Visit a local seed facility.
D. Identify seed samples.
E. Demonstrate ability to perform skills.
F. Take test.

INSTRUCTIONAL MATERIALS

I. Instructional materials included in this unit

A. Information sheets and study guides
B. Seed samples
C. Locally developed slides
D. Test

II. References

Christopher, Everett P. Introductory Horticulture, New York: McGraw-Hill Book Company, 1961.

Hartman and Kester. Plant Propagation -- Principles and Practice. Englewood Cliffs, New Jersey: Prentice-Hall, 1961.

Hedges, Landscaping Your Home. 1962 Instructional Materials Service, 2120 Fyffe Road, Columbus, Ohio.

Rules and Regulations Under the Federal Seed Act, USDA Marketing Service, Service and Regulatory Announcement No. 156. Issued March, 1940, Reprinted 1963.

UNIT VI

FERTILIZERS

GOAL

After completion of this unit, which requires approximately 25 hours of instruction, the student will have a knowledge of fertilizers and their use. The student will be able to operate and calibrate fertilizer equipment. He will be able to sample soils, and interpret the results of the tests. These skills will help a student in a Farm Supplies and Equipment Career.

PERFORMANCE OBJECTIVES

After completing this unit, the student will be able to

I. Concerning fertilizers

- A. Explain how plant growth is affected by fertilizers.
- B. Explain how soil properties affect fertilization.
- C. Describe the characteristics of fertilizer materials.
- D. Interpret fertilizer formulars.

II. Concerning soil testing

- A. Take a soil sample.
- B. Interpret a soil test report.
- C. Recommend the kind and amount of fertilizer to use.

III. Selecting, maintaining, and calibrating fertilizer equipment

- A. Select equipment.
- B. Maintain and service equipment.
- C. Calibrate fertilizer equipment.

IV. Concerning the merchandising of fertilizer

- A. Use methods that will strengthen sales and service.
- B. Recognize trends in the industry.

SUGGESTED ACTIVITIES

I. The instructor will

- A. Discuss goal and objectives relative to career entry.
- B. Provide information sheets and study guides.
- C. Demonstrate soil testing procedures.
- D. Test and evaluate students.

II. The student will

- A. Review information sheets and study guide.
- B. Demonstrate skills learned in the lesson.
- C. Participate in testing and evaluation

INSTRUCTIONAL MATERIALS

I. Included in this unit

- A. Information sheets and study guide
- B. Charts on fertilization
- C. Test
- D. Operators manuals

II. References

McVickar, M.H. Using Commercial Fertilizers. Second Edition. Danville, Illinois: The Interstate Printers and Publishers, 1961.

Dictionary of Plant Foods. Philadelphia: Farm Chemicals, Ware Brothers Company.

Fertilizers Sales and Service, Module No. 9, The Center for Research and Leadership Development in Vocational and Technical Education, The Ohio State University, Columbus, Ohio.

UNIT VII

AGRICULTURAL CHEMICALS

GOAL

After completing this unit, which requires approximately 30 hours of instruction, the student will be able to advise customers in the safe handling, storage and use of agriculture chemicals. The student will have the required skills concerning agricultural chemicals that will help him enter a career in Farm Supplies and Equipment.

PERFORMANCE OBJECTIVES

Completion of this unit will enable the student to

I. Concerning pests

A. Identify the various types of pests and the damages they cause.

II. Concerning agricultural chemicals

A. Recommend the appropriate chemicals.
B. Advise customers in safe handling, storage and use of chemicals.
C. Understand information on labels and other literature pertaining to pesticides.

III. Concerning the marketing of chemicals

A. Use various methods in merchandising agricultural chemicals.

SUGGESTED ACTIVITIES

I. The instructor will

A. Discuss goal and objective relative to career entry.
B. Provide information sheets and study guides.
C. Conduct field trip to farm supply business.
D. Provide insect collection.
E. Provide labels and literature from pesticide containers.
F. Test and evaluate students.

II. The student will

A. Review information sheets and study guide.
B. Identify various pests.
C. Demonstrate skills associated with use of pesticides.
D. Participate in testing and evaluation.

INSTRUCTIONAL MATERIALS

I. Included in this unit

A. Information sheets and study guide
B. Insect collection
C. Pesticide labels and literature
D. Tests

II. References

Agricultural Chemicals - What They Are, How They Are Used. Manufacturing Chemists' Association, Inc., Washington, D.C.

Agricultural Chemicals, The Center for Research and Leadership Development in Vocational and Technical Education, The Ohio State University, olumbus, Ohio.

College of Agriculture Pesticide Bulletins.

UNIT VIII

PET MARKET AND VETERINARIAN SUPPLIES

GOAL

After completing this unit, which consists of approximately 10 hours of instruction, the student will have the competencies which will enable him to meet the needs of customers for pet and veterinary supplies. These skills will help him gain entry in a Farm Supply and Equipment career.

PERFORMANCE OBJECTIVES

After completing this unit, the student will be able to

I. Concerning pet supplies

A. Identify items and describe their use.
B. Recommend appropriate supplies to customers.

II. Concerning veterinary supplies

A. Identify items and describe their use.
B. Recommend appropriate supplies to customers.

SUGGESTED ACTIVITIES

I. The instructor will

A. Discuss goal and objectives relative to career entry.
B. Provide information sheets and study guide.
C. Conduct tour of farm supply stores.
D. Discuss information sheets.
E. Test and evaluate students.

II. The student will

A. Review the information sheet and study guides.
B. Identify supplies and describe their use.
C. Participate in testing and evaluation procedures.

INSTRUCTIONAL MATERIALS

I. Included in this unit

A. Information sheets and study guide
B. Samples of pet supplies and veterinary supplies
C. Catalogs illustrating pet supplies and veterinary supplies
D. Tests

II. References

Miscellaneous Agricultural Supplies and Small Equipment Sales and Service. Module No. 12. The Center for Research and Leadership Development in Vocational and Technical Education, The Ohio State University, Columbus, Ohio.

Catalogs: NASCO, Sears, Franklin Company

UNIT IX

GARDEN CENTERS

GOAL

After completing this unit, which requires approximately 25 hours of instruction, the student will understand the operation of a garden center. He will have the competencies to establish and maintain a lawn. He will be able to identify and manage ornamentals. The skills learned in this unit will help the student in a Farm Supplies and Equipment Career.

PERFORMANCE OBJECTIVES

After completing this unit, the student will be able to do the following

I. Concerning a garden center

A. Describe the duties and qualifications of employees.
B. Describe the operations of a garden center.

II. Concerning lawns

A. Establish a lawn.
B. Maintain a lawn.

III. Concerning ornamentals

A. Identify ornamentals.
B. Plant ornamentals.
C. Care for ornamentals.

SUGGESTED ACTIVITIES

I. The instructor will

A. Discuss goal and objectives relative to career entry.
B. Provide information sheets and study guide.
C. Conduct tour of a garden center facilities.
D. Have garden center manager speak to class on operations of a garden center.
E. Provide plant materials.
F. Discuss and demonstrate procedures outlined in information sheets and study guides.
G. Test and evaluate students.

II. The student will

A. Review information sheets and study guide.
B. Demonstrate knowledge of garden center operation.
C. Identify plants.
D. Participate in testing and evaluation.

INSTRUCTIONAL MATERIALS

I. Included in the unit

A. Information sheets and study guides.
B. Plant specimens
C. Pictures and slides of plant materials
D. Tests

II. References

Shoemaker, James S. and Benjamin Teskey. Practical Horticulture. New York: John Wiley and Sons, Inc.

Knight, E.B. The Management and Marketing Procedures and Practices of Tennessee Nurserymen Dealing in Ornamental Plants for Landscaping, Tennessee Polytechnic Institute, Small Business Administration, Washington, D. C.

Oxfield, J.G. The Nursery Business. Small Business Bulletin No. 14, Small Business Administration, Washington, D.C.

UNIT X

ORIENTATION TO SUPERVISED OCCUPATIONAL EXPERIENCE PROGRAM

GOAL

After completion of this unit, which consists of approximately 5 hours of instruction, the student will have developed an understanding of/and a wholesome attitude toward the supervised occupational experience program which will prepare him for employment in businesses that distribute and service agricultural supplies and equipment.

PERFORMANCE OBJECTIVES

Upon completion of this unit, the student will do the following

I. In the purpose of supervised occupations experience programs

- A. Understand the underlying principles of a supervised occupational experience program.
- B. Understand the requirements of a supervised occupational experience program.

II. In a wholesome attitude essential to success in any occupation

- A. Exhibit the social competencies needed for success in an occupation.
- B. Understand the relationship of different people involved in an experience program.

SUGGESTED ACTIVITIES

I. The instructor will

- A. Discuss goal and objectives relative to career entry.
- B. Use a former student who has participated in a supervised occupational experience to explain the benefits of the program.
- C. Use a businessman who is cooperating employer to describe the problem.
- D. Provide students with information sheets and study guides.
- E. Demonstrate and discuss procedures outlined in information sheets and study guides.
- E. Demonstrate and discuss procedures outlined in information sheets and study guides.
- F. Test and evaluate.

II. The student will

- A. Review information sheets and study guides.
- B. Participate in a supervised occupational experience program.
- C. Be tested and evaluated.

INSTRUCTIONAL MATERIALS

I. Included in this unit

A. Information sheet
B. Study guides
C. Test

II. References

A Study Guide for Placement Employment Programs in Agricultural Business and Industry. Interstate Printers and Publishers, 1965.

Bail, Joe P. and Nelson A. Gordon. Choosing An Occupation. Miscellaneous Bulletin, No. 45, Cornell University, Ithaca, New York, 1963.

Planning and Conducting Cooperative Occupational Experience Programs in Off-Farm Agriculture. The Center for Research and Leadership Development in Vocational and Technical Education, The Ohio State University, 980 Kinnear Road, Columbus, Ohio, 1965.

UNIT XI

ORGANIZATIONS AND FUNCTIONS OF BUSINESSES

GOAL

After completion of this unit, which consists of 40 hours of instruction, the student will have an understanding of the nature of the american business system, financial record keeping procedures includ ng payroll taxes, business law and insurance.

PERFORMANCE OBJECTIVES

Upon completion of this unit, the student will be able to

I. In organization and functions of businesses

A. Understand the nature of the american business system.
B. Identify types of agricultural supply and equipment businesses.
C. Understand the organization patterns of agricultural businesses.

II. In financial record keeping and procedures

A. Demonstrate a workable knowledge of financial record keeping procedures.

III. In payroll taxes, business law and insurance

A. Calculate tax deductions.
B. Understand how government regulates our business system.
C. Understand the types of insurance.

SUGGESTED ACTIVITIES

I. The instructor will

A. Discuss goal and objectives relative to career entry.
B. Provide students with information sheets and study guides.
C. Use visual aids.
D. Demonstrate and discuss procedures outlined in information sheets and study guides.
F. Test and evaluate.

The student will

A. Review information sheets and study guides.
B. Demonstrate ability to accomplish skills.
C. Be tested and evaluated.

INSTRUCTIONAL MATERIALS

I. Included in this unit

A. Information sheet
B. Study guides
C. Visual aids
   1. Tax forms
   2. Sample insurance policies
   3. Legal documents
D. Test

II. References

Glos, Raymond and Harold Baker. Introduction to Business. Fifth Edition. Cincinnatti: South-Western Publishing Company, 1963.

Shilt, Bernard and Harmon Wilson. Business Principles and Management. Fourth Edition. Cincinnatti: South-Western Publishing Co., 1961.

"What Is Business" (Coronet, 10 min.)

Freeman, Hanna, and Kahn. Bookeeping and Accounting. First year course, Second Edition. New York: McGraw-Hill Book Company, 1958.

Tax Guide for Small Businesses, 1964 Edition, U.S. Treasury Department, Internal Revenue Service No. 17.

Fish and Snapp. Applied Business Law, 8th Edition. Cincinnatti: South-Western Publishing Company, 1960.

UNIT XII

HOW TO FIND AND APPLY FOR A JOB

GOAL

After completion of this unit, which consists of approximately 5 hours of instruction, the student will have an understanding of how to find a job and the techniques to use in applying for a position.

PERFORMANCE OBJECTIVES

Upon completion of this unit, the student will be able to

I. In how to find and apply for a job

- A. Utilize resource material for job opportunities.
- B. Fill out application forms accurately.
- C. Write a letter of application.
- D. Sell him/herself to an employer.
- E. Summarize personal information on data sheet.

SUGGESTED ACTIVITIES

I. The instructor will

- A. Discuss goal and objectives relative to career entry.
- B. Provide students with information sheets and study guides.
- C. Use visual aids.
- D. Demonstrate and discuss procedures outlined in information sheets and study guides.
- E. Invite businessman to lecture on how to apply for a job.
- F. Test and evaluate.

II. The student will

- A. Review information sheet and study guides.
- B. Write letters of application.
- C. Demonstrate ability to accomplish skills.
- D. Be tested and evaluated.

INSTRUCTIONAL MATERIALS

I. Included in this unit

- A. Information sheet
- B. Study guides
- C. Visual aids
  1. Newspapers
  2. Want ads
  3. Application forms
- D. Test

II. References

Keily, Helen J. and R.G. Walters. How To Find and Apply for a Job. Second Edition. Cincinnatti: South-Western Publishing Company, 1960.

UNIT XIII

AGRICULTURE SALESMANSHIP

Refer to: FARM MACHINERY SALES AND SERVICE - UNIT XIII

UNIT XIV

MATHEMATICAL CALCULATIONS

GOAL

After completion of this unit, the student will have the mathematical skills used in calculating interest and discounts; in using fractions and decimals; in applying weights and measurements and other calculations which are helpful in a Farm Supply and Equipment career. It is estimated that this would require 15 hours of instruction.

PERFORMANCE OBJECTIVES

Completion of this unit will enable the student to solve mathematical problems related to a career in Farm Supplies and Equipment which involves the following skills.

I. Addition

II. Subtraction

III. Multiplication

IV. Division

V. Determining interest

VI. Figuring discounts

VII. Calculating percentage

SUGGESTED ACTIVITIES

I. The instructor will

A. Discuss goal and objectives relative to career entry.
B. Provide students with information sheets and study guides.
C. Demonstrate and discuss procedures outlined on study guides.
D. Evaluate and test students.

II. The student will

A. Review information sheets and study guides.
B. Demonstrate mathematical skills learned.
C. Participate in testing and evaluation.

INSTRUCTIONAL MATERIALS

I. Included in this unit

A. Information sheets and study guides
B. Samples of scale tickets, invoices and other devices used in marketing transactions
C. Tests

II. References:

Piper and Gruber. Applied Business Mathematics. Eighth Edition. Cincinnatti: South-Western Publishing Company, 1965.

Rosenburg and Lewis. Business Mathematics. Sixth Edition. Dallas: McGraw-Hill Book Company, 1963.

UNIT XV

STORE SKILLS AND PROCEDURES

GOALS

Upon completion of this unit, which consists of 10 hours of instruction, the student will have developed the abilities in store skills and procedures needed by workers for career entry into occupations of selling farm supplies and equipment effectively.

PERFORMANCE OBJECTIVES

Upon completion of this unit, the student will be able to do the following

I. In store skills and procedures

A. Identify merchandise.
B. Prepare merchandise for sale.
C. Understand store policies and procedures.
D. Recommend appropriate merchandise.

SUGGESTED ACTIVITIES

I. The instructor will

A. Discuss goal and objectives relative to career entry.
B. Provide students with information sheets and study guides.
C. Use visual aids.
D. Demonstrate and discuss procedures outlined in study guides.
E. Test and evaluate.

II. The student will

A. Review information sheet and study guides.
B. Demonstrate ability to accomplish skills.
C. Be tested and evaluated.

INSTRUCTIONAL MATERIALS

I. Included in this unit

A. Information sheets
B. Study guides
C. Visual aids
   1. Sale tickets
   2. Blank checks
   3. Credit forms
   4. Inventory forms
D. Test

II. References

Richert, G.H., W.G. Meyer, and P.G. Haines. Retailing Principles and Practices. 46th Edition. New York: McGraw-Hill Book Company, 1962.

Business Procedures, Module No. 6, The Center for Research and Leadership Development in Vocational and Technical Education, The Ohio State University, 980 Kinnear Road, Columbus, Ohio, 43212, August 1965.

UNIT XVI

HUMAN RELATIONS

Refer to: FARM MACHINERY SALES AND SERVICE - UNIT XIV

LIVESTOCK AND POULTRY

Description: Careers prepared for in the Livestock and Poultry field are those requiring technical and professional skills that can be offered at the high school level. A high school vocational agriculture student will be given opportunities to receive training in marketing, slaughtering, processing, and distribution of meat, milk and their by-products and similiar activities. Students pursuing this training have previously selected this area as their career objective and the material is designed to prepare them for job entry in the field of Livestock and Poultry.

The Livestock and Poultry Family consists of the following units of instruction:

UNIT I

AUXILIARY PUMPS, PIPING AND AIR COMPRESSORS

GOAL

After completion of this unit, which requires 10 hours of instruction, the student will have developed basic knowledge of the various types of pumps and piping and their related problems in the processing of meat, milk and poultry. He will recognize the various classifications, differences, and regulation of air compressors useful in the livestock processing industry.

PERFORMANCE OBJECTIVES

Upon completion of this unit, the student will

I. In pumps

- A. Be able to describe the classes, types, parts and problems of pumps.
- B. Be able to determine the extent of repairs needed.
- C. Be able to demonstrate a working knowledge of the uses, operation, and maintenance of pumps useful in livestock industries.

II. In air compressors

- A. Be famfliar with the classification and types of air compressors.
- B. Be able to service compressors.
- C. Be able to regulate air compressors.

SUGGESTED ACTIVITIES

I. The instructor will

A. Discuss goal and objectives relative to career entry.
B. Provide an old pump.
C. Conduct tour of manufacturing or processing plants and observe uses of air compressors.
D. Provide students with information sheets and study guides.
E. Demonstrate and discuss procedures outlined in information sheets and study guides.
F. Use visual aids.
G. Arrange for resource persons to talk to class on problems peculiar to the use of air compressors.
H. Evaluate and test.

II. The students will

A. Review information sheet and study guides.
B. Demonstrate ability to accomplish skills in the use of equipment.
C. Be tested and evaluated.

INSTRUCTIONAL MATERIALS

I. Included in this unit

A. Information sheet
B. Study guides
C. Visual aids
   1. Films and filmstrips
   2. Charts
D. Test

II. References

Manual for Milk Plant Operators, Milk Industry Foundation, 1145 19th Street N.W., Washington 6, D.C.

Tressler, D.C. and C.F. Evers. The Freezing Preservation of Foods. Connecticut: The AVI Publishing Company, 1957.

UNIT II

ELECTRICAL POWER, SERVICE AND MAINTENANCE

GOAL

After completion of this unit, which consists of 15 hours of instruction, the student will have a workable knowledge of the terms, methods and materials essential to electrical power for processing plants. He will have developed the skill to calculate the requirements of electric motors used in livestock processing plants.

PERFORMANCE OBJECTIVES

Upon completion of this unit, the student will be able to

I. In electrical terms, wiring methods and materials

- A. Identify the terms and main points in evaluating the source of electrical energy.
- B. Demonstrate the methods of wiring.
- C. Utilize the different types of wires and conducts suitable to livestock processing.
- D. Understand the electrical code.

II. In electrical contracts

- A. Calculate and read electrical bills.
- B. Interpret the provisions included in the electrical contracts.

III. In electric motors

- A. Understand the size, speed and type of motors.
- B. Understand how motors are controlled.

SUGGESTED ACTIVITIES

I. The instructor will

- A. Provide students with information sheets and study guides.
- B. Demonstrate and discuss procedures outlined in information sheets and study guides.
- C. Conduct tour of processing plant to study electrical motors.
- D. Provide motors for students to work with.
- E. Evaluate and test.

II. The student will

- A. Review information sheet and study guide
- B. Demonstrate proficiency in mastering the skills outlined in the lesson.
- C. Be tested and evaluated.

INSTRUCTIONAL MATERIALS

I. Included in this unit

- A. Information sheet
- B. Study guides
- C. Test

II. References

Manual for Milk Plant Operators, Milk Industry Foundation, 1145 19th Street N.W., Washington 6, D.C.

Tressler, D.K. and C.F. Evers, The Freezing Preservation of Foods. Westport, Connecticut: The AVI Publishing Company, 1957.

UNIT III

REFRIGERATION

GOAL

After completion of this unit, the student will have developed a knowledge of the basic operative procedures in refrigeration. He will be able to perform maintenance on refrigeration units and understand the basic principles of refrigeration that will prepare him for career entry. Approximately 15 hours of instruction are required for completion.

PERFORMANCE OBJECTIVES

Upon completion of this unit, the student will be able to

I. In principles of refrigeration

   A. Demonstrate the basic principles of refrigeration.

II. In operation and parts of a refrigeration system

   A. Understand the operation of the refrigeration system.
   B. Demonstrate the functions of the parts of a refrigeration system including the purposes and characteristics.
   C. Explain the functions and characteristics of gases used in refrigeration.

III. In performance and maintenance of the refrigeration system

   A. Set and adjust controls.
   B. Recognize false readings with pressure gauges.
   C. Regulate valves
   D. Service and perform maintenance on refrigeration units.

SUGGESTED ACTIVITIES

I. The instructor will

   A. Counsel with student on problems arising from his job experiences.
   B. Provide valves, compressors, condensers, thermometers, pressure gauges and those parts associated with refrigerators.
   C. Provide study with information sheet and study guides.
   D. Invite processing plant managers to talk to the class on refrigeration problems and operation.
   E. Invite refrigeration mechanic to demonstrate certain phases of refrigeration procedures or operations to the class.
   F. Demonstrate and discuss procedures outlined in information sheets and study guides.
   G. Evaluate and test.

II. The student will

A. Review information sheet and study guides.
B. Demonstrate ability to accomplish skills.
C. Be tested and evaluated.

INSTRUCTIONAL MATERIALS

I. Included in this unit

A. Information sheet
B. Study guides
C. Audio-visual aids
   1. Slides
   2. Films
D. Test

II. References

Manual for Milk Plant Operators, Milk Industry Foundation, 1145 19th Street N.W., Washington 6, D.C., 1949.

Tressler, D.K. and C.F. Evers. The Freezing Preservation of Foods. Westport, Connecticut: The AVI Publishing Company, 1957.

UNIT IV

PLANT SANITATION

GOAL

After completion of this unit, the student will have a knowledge of the sanitary operation of equipment used in processing and will be familiar with state and federal laws regulating plant sanitation. Approximately 25 hours of classroom instruction and laboratory work are required for career entry.

PERFORMANCE OBJECTIVES

Upon completion of this unit, the student will demonstrate these abilities

I. In sanitary maintenance of building, equipment and personnel

A. Interpret the sanitary code.
B. Recognize unsanitary conditions.
C. Exercise the cleaning procedures to follow in cleaning a building.
D. Practice personal hygiene in handling food.

II. In supply and disposal of waste

A. Understand the importance of acquiring and using pure water.
B. Demonstrate a knowledge of bacterial count and chlorination.
C. Identify the characteristics of good water.
D. Follow regulations in disposing of raw garbage and other waste.
E. Dispose of harmful chemicals.

SUGGESTED ACTIVITIES

I. The instructor will

A. Discuss goal and objectives relative to career entry.
B. Provide student with information sheets and study guides.
C. Conduct tour to packing house, milk processing plant and vegetable processing plant.
D. Provide student with health regulation procedures.
E. Provide students with information sheets and study guides.
F. Demonstrate and discuss procedures outlined on information sheets and study guides.
G. Evaluate and test.

II. The student will

A. Review information sheet and study guides.
B. Demonstrate proficiency in carrying out the abilities.
C. Take test.

INSTRUCTIONAL MATERIALS

I. Included in this unit

A. Information sheet
B. Score cards
C. Study guides
D. Test

II. References

Consumer and Marketing Service, Meat Inspection Division, Washington, D.C.

Regulations Governing the Meat Inspection of the USDA, Washington, D.C.

Manual for Milk Plant Operation, Milk Industry Foundation, 1145 19th Street N.W., Washington, D.C.

UNIT V

HYDRAULIC SYSTEMS

Refer to: FARM MACHINERY SALES AND SERVICE - UNIT III

UNIT VI

TRUCK OPERATION AND MAINTENANCE

GOAL

Upon completion of this unit, which consists of approximately 10 hours of instruction, the student will have competencies needed in the selection and operation of diesel and gasoline powered trucks. He will develop an understanding of and will be able to carry out common maintenance procedures. These competencies and skills will prepare the student for entry in a career within the Livestock and Poultry area.

PERFORMANCE OBJECTIVES

Upon completion of this unit, the student will be able to

I. In selecting, operating and maintaining trucks

A. Select a truck that meets the needs of the business.
B. Operate a truck according to safety standards.
C. Service and maintain a truck according to manufacturer's recommendations.

SUGGESTED ACTIVITIES

I. The instructor will

A. Discuss goal and objectives relative to career entry.
B. Motivate through demonstration.
C. Provide students with information sheets and study guides.
D. Use locally developed slides of different types of trucks.
E. Plan and carry out a class visit to a truck dealer.
F. Demonstrate and discuss procedures outlined in information sheets and study guides.
G. Evaluate and test.

II. The student will

A. Review information sheet and study guide.
B. Demonstrate ability to accomplish skills.
C. Go on tour of truck dealers.
D. Take test.

INSTRUCTIONAL MATERIALS

I. Instructional materials included in this unit

A. Information sheet
B. Study guides
C. Locally developed slides
D. Test

II. References

Moses, Ben D. and Kenneth R. Frost. Farm Power. New York: John Wiley and Sons, Inc.

Phipps, McColly, Scranton, and Cook. Farm Mechanics. Danville, Illinois: The Interstate Printers and Publishers, Inc.

For Better Diesel Overhaul, Form 466 m. Hagerstown, Indiana: Perfect Circle Corporation, 1961.

Manufacturers' service manuals available through agricultural truck dealers.

UNIT VII

MARKETING LIVESTOCK AND POULTRY

GOAL

After completion of this unit, which contains approximately 65 hours of instruction, the student will be able to slaughter, dress, cut, grade and store eggs and poultry efficiently. He will have the competencies needed for marketing, slaughtering, and distributing livestock and livestock products. He will have the knowledge and skills needed in efficient marketing of milk and milk products. With these competencies, the student will be prepared for a career in Livestock and Poultry.

PERFORMANCE OBJECTIVE

Upon completion of this unit, the student will be able to

I. In marketing poultry and poultry products.

A. Perform ante-mortem and post-mortem inspection of poultry.
B. Slaughter, dress and cut poultry efficiently.
C. Grade, package and store poultry products.

II. In marketing, slaughtering and distributing livestock and livestock products

A. Understand and use the methods of marketing livestock.
B. Prepare for and carry out shipping of livestock.
C. Determine market classes of livestock.
D. Slaughter and dress livestock.
E. Recognize and/or identify the cuts of meat.

SUGGESTED ACTIVITIES

I. The instructor will

A. Discuss goal and objectives relative to career entry.
B. Motivate through demonstration.
C. Provide students with information sheets and study guides.
D. Use locally developed slides of livestock and poultry processing and marketing facilities.
E. Plan and conduct a tour of a facility.
F. Demonstrate and discuss procedures outlined in information sheets and study guides.
G. Have a resource person speak to class.
H. Evaluate and test.

II. The student will

A. Study information sheet and guide.
B. Demonstrate ability to accomplish skills.
C. Go on tour of local facility.
D. Take test.

INSTRUCTIONAL MATERIALS

I. Instructional materials included in this unit

A. Information sheet
B. Study guide
C. Locally developed slides
D. Test

II. References

Cooper, James B.. Poultry from Home to Market. Atlanta, Georgia: Turner E. Smith and Company.

Poultry Inspector's Handbook, Agricultural Marketing Service, Poultry Division, Inspection Branch, USDA.

Meat Identification Score Card, Form 8, American Meat Institute.

Ensminger, M.E. Beef Cattle Science. Danville, Illinois: The Interstate Printers and Publishers.

Grade "A" Pasteurized Milk Ordinance, 1965 Recommendations of U.S. Public Health Service, Publication No. 229.

UNIT VIII

PROCESSING MILK AND MILK PRODUCTS

GOAL

After completion of this unit, which will require approximately 15 hours of instruction, the student will have developed the knowledge and skills needed in the efficient processing of milk and milk products. He will have mastered the skills essential to testing milk for butterfat. The student will be able to recognize defects in milk and cream. He will have the necessary knowledge and skills concerning the processing of milk and milk products to help secure entry in a Livestock and Poultry career.

PERFORMANCE OBJECTIVES

Upon completion of this unit, the student will be able to do the following

I. Concerning processing milk and milk products

A. Understand laws and regulations involved in milk industry.
B. Use equipment and know procedures involved in processing milk.

II. Concerning testing milk for butterfat

A. Operate equipment used in testing for butterfat.
B. Test milk for butterfat.

III. Concerning defects in milk and cream

A. Recognize defects in milk and cream.
B. Correct the causes of defects in milk and cream.
C. Operate milk plant equipment in order to avoid defects in milk and cream.

SUGGESTED ACTIVITIES

I. The instructor will

A. Discuss goal and objectives relative to career entry.
B. Demonstrate defects in milk and cream.
C. Take students to milk processing plant to observe skills in operating equipment.
D. Provide students with study guides.
E. Discuss study guides with students.
F. Evaluate and test.

II. The student will

A. Review information sheets and study guides.
B. Go to processing plants to observe operations and processes.
C. Demonstrate ability to operate processing equipment.
D. Be tested and evaluated.

INSTRUCTIONAL MATERIALS

I. Included in this unit

A. Milk samples with defects
B. Filmstrip "Testing Milk for Butterfat" NASCO
C. Filmstrip "Bacteria, Milk and Business" NASCO
D. Study guides
E. Information sheets
F. Test

II. References

Manual for Milk Plant Operators, Milk Industry Foundation, 1145 19th Street, N.W., Washington, D.C.

Judkins, H.F. and H.A. Kenner. Milk Production and Processing. New York; John Wiley and Sons, 1960.

UNIT IX

GROWTH AND DESTRUCTION OF MICRO-ORGANISMA

GOAL

After completion of this course, the student will be familiar with the helpful and harmful micro-organisms prevalent in livestock and milk products. He will know the factors affecting growth and destruction of microbes. The student will have the necessary knowledge to enable him to pursue a career in Livestock and Poultry. This unit requires approximately 20 hours of instruction.

PERFORMANCE OBJECTIVES

Completion of this unit will enable the student to do the following

I. Concerning micro-organisms prevalent in livestock poultry and milk products

A. Understand the terms and definitions applicable to micro-organisms.
B. Distinguish between helpful and harmful micro-organisms.

II. Concerning growth and destruction of micro-organisms

A. Understand the importance of sanitation in handling food products.
B. Understand the factors which affect the growth and destruction of micro-organisms.

III. Concerning disease production bacteria in livestock and poultry products

A. Know the diseases that may be transmitted in livestock products.

SUGGESTED ACTIVITIES

I. The instructor will

A. Discuss goal and objectives relative to career entry.
B. Provide students with information sheets and study guides.
C. Exhibit livestock products damaged by micro-organisms.
D. Conduct a tour for the students to observe procedures in processing plants which involve sanitation practices.
E. Discuss information sheets and study guides.
F. Evaluate and test students.

II. The student will

A. Review information sheets and study guides.
B. Identify damage done to livestock products by micro-organisms.
C. Take test.

INSTRUCTIONAL MATERIALS

I. Included in this unit

A. Information sheet
B. Study guides
C. Slides identifying micro-organisms
D. Slides illustrating damage done by micro-organisms
E. Test

II. References

Manual for Milk Plant Operators, Milk Industry Foundation, Washington, D.C.

The Science of Meat and Meat Products. American Meat Institute Foundation, W.H. Freeman and Company, Reinhold Publishing Corporation, New York, 1960.

UNIT X

ORIENTATION TO SUPERVISED OCCUPATIONAL EXPERIENCE PROGRAMS

Refer to: FARM SUPPLIES AND EQUIPMENT - UNIT X

UNIT XI

GENERAL PRINCIPLES OF BUSINESS IN RELATIONSHIP TO LIVESTOCK AND POULTRY OCCUPATIONS

GOAL

After completion of this unit, the student will know what is needed to establish a business and operate a business. He will understand how the american free-enterprise system is organized to do business. He will have a working knowledge of social security and income tax laws as they apply to an employee. The student will have developed the necessary business skills which will aid him in pursuing a career in Livestock and Poultry. This unit should take approximately 30 hours to complete.

PERFORMANCE OBJECTIVES

Completion of this unit will enable the student to do the following

I. Concerning social security and income taxes

- A. Understand the need of financial security in old age or during periods of unemployment and provisions the act has for this.
- B. Understand income tax as a source of government revenue and the responsibility of the employer to collect and report it.

II. Concerning functions and organization of american business

- A. Understand the functions of business.
- B. Understand the organization of a business.

SUGGESTED ACTIVITIES

I. The instructor will

- A. Discuss goal and objectives relative to career entry.
- B. Provide student with information sheets and study guides.
- C. Plan and conduct a tour of local livestock and poultry businesses.
- D. Bring in resource person from social security office.
- E. Discuss information sheets and study guides and field trips.
- F. Evaluate and test students.

II. The student will

A. Review information sheets and study guides.
B. Go on trips to local livestock and poultry businesses.
C. Describe functions of these businesses in the community.
D. Fill out social security and income tax forms.
E. Participate in testing and evaluation.

INSTRUCTIONAL MATERIALS

I. Included in this unit

A. Income tax forms
B. Social security forms
C. Films and filmstrips
   1. "I Want That Job"
   2. "They Need to Know"
   3. "What Is Business?"
D. Information sheet and study guides
E. Test

II. References

How We Organize to do Business in America. American Institute of Cooperation, 1616 H. Street N.W., Washington, D.C.

Course of Study in Non-Farm Agricultural Occupations, University of Kentucky 1965.

Hoover, N.K. Handbook of Agricultural Occupations. Danville, Illinois: The Interstate Printers and Publishers, Inc. 1963.

Internal Revenue Service School Program, IRS, Washington, D.C.

UNIT XII

HUMAN RELATIONS

Refer to: FARM MACHINERY SALES AND SERVICE - UNIT XIV

UNIT XIII

AGRICULTURAL SALESMANSHIP

Refer to: FARM MACHINERY SALES AND SERVICE - UNIT XIII

UNIT XIV

MATHEMATICAL CALCULATIONS

GOAL

After completion of this unit, the student will have the mathematical skills used in calculating interest and discounts; in using fractions and decimals; in applying weights and measurements and other calculations which are helpful in a Livestock and Poultry career. It is estimated that this would require 15 hours of instruction.

PERFORMANCE OBJECTIVES

Completion of this unit will enable the student to solve mathematical problems related to a career in Livestock and Poultry which involves the following skills

I. Addition

II. Subtraction

III. Multiplication

IV. Division

V. Determining interest

VI. Figuring discounts

VII Calculating percentage

SUGGESTED ACTIVITIES

I. The instructor will

A. Discuss goal and objectives relative to career entry.
B. Provide students with information sheets and study guides.
C. Demonstrate and discuss procedures outlined on study guides.
D. Evaluate and test students.

II. The student will

A. Review information sheets and study guides.
B. Demonstrate mathematical skills learned.
C. Participate in testing and evaluation.

INSTRUCTIONAL MATERIALS

I. Included in this unit

A. Information sheets and study guides.
B. Samples of scale tickets, invoices and other devices used in marketing transactions.
C. Test

II. References

Piper and Gruber. Applied Business Mathematics. Eighth Edition. Cincinnatti: South-Western Publishing Company, 1965.

Rosenburg and Lewis. Business Mathematics. Sixth Edition. Dallas: McGraw-Hill Book Company, 1963.

CROPS, FORESTRY AND SOIL CONSERVATION

Description: Crops, Forestry and Soil Conservation careers prepared for involve training in the agri-business phase of those areas that can be offered at the high school level. This will include instruction in agricultural mechanics, business and management principles, and technical and professional skills basic to crops, forestry and soil conservation. Students pursuing this training previously selected this area as their career objective and the material is designed to prepare them for job entry in the field of Crops, Forestry and Soil Conservation.

This family consists of the following units of instruction:

UNIT I

FARM SURVEY

GOAL

After completion of this unit, which requires approximately 20 hours of instruction, the student will understand terminology used in surveying. He will be able to ready and use a survey instrument. The skills developed in this unit will enable the student to secure employment in a crop, forestry and soil conservation career.

PERFORMANCE OBJECTIVES

After completing this unit, the student will have developed the following skills

I. Use of the terminology associated with surveying

II. Describe the parts of an instrument and their functions

III. Ready an instrument for use

IV. Read a rod

V. Run a terrace

VI. Make proper field notes

SUGGESTED ACTIVITIES

I. The instructor will

A. Discuss goal and objectives relative to career entry.
B. Provide information sheets and study guide.
C. Demonstrate and explain surveying skills to the students.
D. Test and evaluate students.

II. The student will

A. Review information sheets and study guide.
B. Demonstrate ability to use the surveying instrument.
C. Be tested and evaluated.

INSTRUCTIONAL MATERIALS

I. Included in this unit

A. Information sheets and study guide
B. Equipment use in surveying
C. Test

II. References

Directions for Testing, Adjusting, Operation and Care for Bostrom Farm Level.

Elementary Soil and Water Engineering. Schwab, Erevert, Barnes and Edminster. Publishers: John Wiley and Sons, New York.

Farm Mechanics. Phipps, McColly, Scranton and Cook.

UNIT II

SELECTION, CARE AND MAINTENANCE OF TRACTORS AND EQUIPMENT

GOAL

After completion of this unit, which consists of 30 hours of instruction, the student will have developed skills to select and maintain tractors and equipment. He will be able to make proper adjustments and follow safety precautions in the operation of tractors and equipment that will prepare him for career entry in occupations of Crops, Forestry and Soil Conservation area.

PERFORMANCE OBJECTIVES

Upon completion of this unit, the student will be able to

I. In selection of tractors and equipment

A. Use appropriate terminology.
B. Identify types of tractors and equipment.
C. Select tractors and equipment for different operations.
D. Analyze economic factors.

II. In care and maintenance of tractors and equipment

A. Utilize safety precautions.
B. Identify parts.
C. Service according to operator's manual.

SUGGESTED ACTIVITIES

I. The instructor will

A. Discuss goal and objectives relative to career entry.
B. Use visual aids.
C. Provide students with information sheets and study guides.
D. Conduct tour to a local tractor dealer.
E. Demonstrate and discuss procedures outlined in information sheets and study guides.
F. Test and evaluate.

II. The student will

A. Review information sheets and study guides.
B. Demonstrate ability to accomplish skills.
C. Go on tour.
D. Be tested and evaluated.

INSTRUCTIONAL MATERIALS

I. Included in this unit

A. Information sheets
B. Study guides
C. Service manual
D. Catalog of tractors and equipment
E. Films
F. Test

II. References

Bedell, Earl, and F. Irving. Tractors and Crawlers. American Technical Society, Chicago, Illinois, 1963.

The Operation Care and Repair of Farm Machinery. 28th Edition, John Deere and Company, Moline, Illinois.

Farm Tractors, Basic Principles, Operations and Maintenance. Engineering Bulletin No. FT-S3, American Oil Company, New York City, New York.

UNIT III

SELECTION, CARE, OPERATION, AND MAINTENANCE OF SMALL GASOLINE ENGINES AND EQUIPMENT

Refer to: FARM MACHINERY SALES AND SERVICE - UNIT V

UNIT IV

WELDING

Refer to: FARM MACHINERY SALES AND SERVICE - UNIT I

UNIT V

ELECTRICITY

Refer to: LIVESTOCK AND POULTRY - UNIT II

UNIT VI

SKETCHING AND DRAWING

GOAL

After completion of this unit, which consists of 15 hours of instruction, the student will have developed skills in making sketches, drawings and floor plans. These competencies will prepare students for occupational careers in crops, forestry and soil conservation.

PERFORMANCE OBJECTIVES

Upon completion of this unit, the student will be able to

I. In sketching and drawing

- A. Select drawing equipment.
- B. Make sketches and drawings.
- C. Draw floor plans.
- D. Read blueprints.
- E. Interpret drawings.

SUGGESTED ACTIVITIES

I. The instructor will

- A. Discuss goal and objectives relative to career entry.
- B. Provide students with information sheets and study guides.
- C. Demonstrate and discuss procedures outlined in information sheets and study guides.
- D. Test and evaluate.

II. The student will

- A. Review information sheets and study guides.
- B. Demonstrate ability to accomplish skills.
- C. Be tested and evaluated.

INSTRUCTIONAL MATERIALS

I. Included in this unit

- A. Information sheets
- B. Study guides
- C. Drafting equipment and blueprints
- D. Test

II. References

Pamelek, Stanley J. An Introduction to Drafting. Boston: D.C. Heath and Company.

Jones, Mac M. Shop Work on the Farm. New York: McGraw-Hill Book Company, Inc.

UNIT VII

GRADING, PROCESSING AND STORING OF CROPS AND FORESTRY PRODUCTS

GOAL

Upon completion of this unit, which will consist of approximately 50 hours of instruction, the student will have developed proficiencies in grading, processing and storing of crop and forestry products. These skills will help prepare him for job entry in the crops and forestry area.

PERFORMANCE OBJECTIVES

Upon completion of this unit, the student will be able to

I. In grading crops and forestry products

- A. Use the correct terminology.
- B. Grade according to accepted standards.
- C. Use different grading methods and equipment.
- D. Sample according to regulations.

II. In processing crops and forestry products

- A. Use the correct terminology.
- B. Operate facilities and equipment.
- C. Crate and stack efficiently.
- D. Label containers with appropriate information.

III. In storing crops and forestry products

- A. Use correct terminology.
- B. Figure storage space requirements.
- C. Calculate shrinkage.
- D. Run test for moisture.
- E. Control temperature.
- F. Use appropriate chemicals for insect and disease control.
- G. Use appropriate storing procedures.

SUGGESTED ACTIVITIES

I. The instructor will

A. Discuss goal and objectives related to career entry.
B. Motivate through demonstration.
C. Provide students with information sheets and study guides.
D. Use charts of USDA grades.
E. Use locally developed slides of processing and storage facilities.
F. Demonstrate and discuss information sheets and study guides.
G. Evaluate and test.

II. The student will

A. Review information sheets and study guides.
B. Discuss terminal and performance objectives.
C. Demonstrate ability to accomplish skills.
D. Take test.

INSTRUCTIONAL MATERIALS

I. Instructional materials included in this unit

A. Information sheets and study guides.
B. Locally developed slides of processing and storing facilities.
C. USDA grade charts of:
   1. Sweet potatoes
   2. Soybeans
   3. Nut crops
   4. Grain crops
   5. Forestry products
   6. Fruits
   7. Vegetables
D. Test

II. References

Carew, John and Work, Paul. Vegetable Production and Marketing. John Wiley and Sons.

The Commercial Storage of Fruits, Vegetables, and Florist and Nursery Stock. Office of Information, U.S. Department of Agriculture. Washington D.C. 20250

Official Grade Standards and Inspection Service for Fresh Fruits and Vegetables. Office of Information, USDA.

Forestry Handbook for Agriculture Teachers. State Department of Education, Louisiana.

Control of Insect Pests of Grain in Elevator Storage. Farmers Bulletin 1880.

Official Grain Standards of the United States. USDA, Agricultural Marketing Service, Grain Division SRA-AMS-77, Washington, D.C. 20250.

UNIT VIII

FORESTRY MANAGEMENT AND SOIL CONSERVATION

GOAL

After completing this unit, which requires approximately 50 hours of instruction, the student will have developed the skill to practice accepted procedures in forestry management and soil conservation. The skills will help prepare the student for a career in Crops, Forestry and Soil Conservation.

PERFORMANCE OBJECTIVES

After completing this unit, the student will be able to

I. Concerning site selection

- A. Identify types of sites.
- B. Select trees best suited for different sites.

II. Concerning the establishing of a timber stand

- A. Operate equipment used in tree planting operations.
- B. Follow approved practices in establishing a stand.
- C. Use thinning and pruning methods.

III. Concerning Hardwood Control and Utilization

- A. Use chemical and mechanical methods of controlling hardwoods in pine forests.
- B. Determine uses of hardwood timber.

IV. Concerning fire prevention and control

- A. Establish a fire prevention program.
- B. Evaluate the damaging effects of fire.
- C. Use fire control tools and equipment.

V. Concerning the estimation of timber

- A. Use appropriate instruments.
- B. Demonstrate mathematical skills.

VI. Concerning Disease and Insect Control

- A. Identify damage.
- B. Carry out approved methods of control.

VII. Concerning harvesting and marketing of forest products

- A. Describe methods and procedures used in harvesting timber.
- B. Identify marketing outlets for forestry products.
- C. Obtain and use technical assistance.

SUGGESTED ACTIVITIES

I. The instructor will

A. Discuss goal and objectives relative to career entry.
B. Provide information sheets and study guide.
C. Have foresters discuss skills with students.
D. Conduct field trips to observe skills being performed.
E. Demonstrate and discuss procedures with students.
F. Test and evaluate students.

II. The student will

A. Review information sheets and study guide.
B. Demonstrate ability to perform skill necessary in forestry management and soil conservation.
C. Be tested and evaluated.

INSTRUCTIONAL MATERIALS

I. Included in this unit

A. Information sheets and study guide
B. Forestry specimens
C. Tools and equipment used in developing skills
D. Slides
E. Aerial photographs
F. Tests

II. References

Brown, Clair A. Commercial Trees of Louisiana. Louisiana Forestry Commission, 1956.

Burges. Soil Erosion Control. Turner E. Smith Company.

Gunter, Erin. Enemies of the Forest (Insects and Diseases). Louisiana Forestry Commission.

Mobley, M.D. and Elliot. Southern Forestry. Turner E. Smith Company.

Myers and Mobley. Ten Lessons in Forestry. Turner E. Smith Company.

UNIT IX

JOB PROCUREMENT

Refer to: FARM SUPPLIES AND EQUIPMENT - UNIT XXII

UNIT X

HUMAN RELATIONS INVOLVED IN SUCCESSFUL PERFORMANCE IN JOBS RELATED TO CROPS AND FORESTRY PRODUCTS

Refer to: FARM MACHINERY SALES AND SERVICE - UNIT XIV

UNIT XI

SALESMANSHIP

Refer to: FARM MACHINERY SALES AND SERVICE - UNIT XIII

UNIT XII

BUSINESS MATHEMATICS

Refer to: FARM SUPPLIES AND EQUIPMENT - UNIT XIV

UNIT XIII

GENERAL PRINCIPLES OF BUSINESS, RECORD KEEPING AND LEGAL INFORMATION

Refer to: FARM SUPPLIES AND EQUIPMENT - UNIT XI

ORNAMENTAL HORTICULTURE

Description: Ornamental Horticulture careers prepared for involve training in the production and agri-business phases of this field that can be offered at the high school level. This will include instruction in agricultural mechanics, business and management skills and production skills basic to ornamental horticulture.

Students pursuing this training previously selected this area as their career objective and the material is designed to prepare them for job entry in the field of ornamental horticulture.

This family consists of the following units of instruction:

UNIT I

SELECTION, CARE, OPERATION, AND MAINTENANCE OF SMALL ENGINES AND EQUIPMENT

Refer to: FARM MACHINERY SALES AND SERVICE - UNIT V

UNIT II

CONSTRUCTING, MAINTAINING AND USING PLANT GROWING STRUCTURES

GOAL

After completion of this unit, which requires approximately 20 hours of instruction, the student will have developed the skills to construct, maintain and operate plant growing structures for purposes of self-employment or job entry in occupations of ornamental horticulture.

PERFORMANCE OBJECTIVES

After completion of this unit, the student will be able to do the following:

I. In identifying and using various types of plant growing structures

- A. Identify different structures.
- B. Construct different structures.

II. In maintaining plant growing structures

- A. Use terminology correctly.
- B. Operate growing structures.
- C. Maintain growing structures.

SUGGESTED ACTIVITIES

I. The instructor will

A. Discuss goal and objectives relative to career entry.
B. Provide students with information sheets and study guides.
C. Conduct tour of greenhouses to study structures and operations.
D. Demonstrate and discuss procedures outlined in information sheets and study guides.
E. Test and evaluate.

II. The student will

A. Review information sheets and study guides.
B. Go on tour.
C. Demonstrate ability to accomplish skills.
D. Be tested and evaluated.

INSTRUCTIONAL MATERIALS

I. Included in this unit

A. Information sheets
B. Study guides
C. Literature on growing structures
D. Test

II. References

Bailey, L. H. The Standard Cyclopedia of Horticulture, New York: The MacMillan Company.

Construction of Plastic Greenhouses. Circular 492, Purdue University, Agricultural Extension Service, Lafayette, Indiana.

Constructing, Maintaining and Using Plant Growing Structures. Module No. 7, The Center for Research and Leadership.

Development in Vocational and Technical Education, The Ohio State University, 980 Kinnear Road, Columbus, Ohio 43212.

UNIT III

USING AND CARING FOR ORNAMENTAL PLANTS AND LANDSCAPE STRUCTURES

GOAL

After completion of this unit, which consists of approximately 10 hours of instruction, the student will have developed abilities in the proper use and

care of plants, materials and landscape structures. The competencies will prepare him for career entry in ornamental horticulture.

PERFORMANCE OBJECTIVES

After completion of this unit, the student will be able to

I. In caring for and protecting wounded and damaged plants

- A. Use terminology correctly.
- B. Recognize type of damage.
- C. Select the proper protective method for the damaged part.
- D. Use correct chemicals.
- E. Apply dressings.
- F. Treat cavities.
- G. Use safety precautions.

II. In making use of materials for landscaping structures

- A. Use terminology correctly.
- B. Identify tools, fixtures and fittings.
- C. Use concrete in building landscape structures.
- D. Prepare and paint landscape structures.
- E. Plan and construct landscape structures.

SUGGESTED ACTIVITIES

I. The instructor will

- A. Discuss goal and objectives relative to career entry.
- B. Provide student's with information sheets and study guides.
- C. Conduct field trip to observe landscape structures.
- D. Demonstrate and discuss procedures outlined in information sheets and study guides.
- E. Test and evaluate.

INSTRUCTIONAL MATERIALS

I. Included in this unit

- A. Information sheets
- B. Study guides
- C. Damaged trees and plant parts
- D. Pictures of landscape structures
- E. Test

H. References

Christopher, E. P. Introductory Horticulture. New York: McGraw-Hill Book Company.

Janick, Jules. Horticultural Science. San Francisco: W. J. Freeman Company.

Concrete Technology Instructor's Guide. Portland Cement Association Publication.

UNIT IV

LANDSCAPE DESIGN

GOAL

After completion of this unit, which requires 20 hours of instruction, the student will have developed the ability to design landscapes and select and maintain plants used in the landscape. These competencies will prepare students for a career entry in occupations of ornamental horticulture.

PERFORMANCE OBJECTIVES

Upon completion of this unit, the student will be able to

I. In landscape designs

- A. Use terminology correctly.
- B. Make landscape drawings to scale.
- C. Interpret drawings.
- D. Landscape grounds.

II. In selection of plants for designs

- A. Use terminology correctly.
- B. Identify plants.
- C. Demonstrate uses of plants.
- D. Understand the growth habits of plants.
- E. Identify different grasses used in landscaping and their requirements.
- F. Select appropriate plants.

III. Planting and maintaining plants in the landscape design

- A. Demonstrate the ability to plant various types of plants used in the landscape.
- B. Utilize proper tools and materials.
- C. Demonstrate different methods and techniques required to maintain plants.
- D. Identify and use chemicals common to ornamental plants.

SUGGESTED ACTIVITIES

I. The instructor will

A. Discuss goal and objectives relative to career entry.
B. Provide students with information sheets and study guides.
C. Conduct tour to local nurseries.
D. Demonstrate and discuss procedures outlined in information sheets and study guides.
E. Test and evaluate.

II. The student will

A. Review information sheets and study guides.
B. Go on tour.
C. Demonstrate ability to accomplish skills.
D. Be tested and evaluated.

INSTRUCTIONAL MATERIALS

I. Included in this unit

A. Information sheets
B. Study guides
C. Audio-visual aids
   1. Charts and pictures
   2. Films and filmstrips
D. Glossary of terms
E. Test

II. References

Bailey, L.H. Standard Cyclopedia of Horticulture. New York: The MacMillan Company.

Shoemaker and Teskey. Practical Horticulture. New York: John Wiley and Sons, Inc.

Steffek, Edwin F. Pruning Made Easy. New York: Henry Holt and Company.

Simplified Way to Success in Planting and Care of Your Roses, Shrubs, Trees, Etc. Stark Brothers Nurseries and Orchards Company, Louisiana, Missouri.

UNIT V

IDENTIFICATION OF ORNAMENTAL PLANTS

GOAL

Upon completion of this unit, which consists of approximately 30 hours of instruction, the student will be proficient in identifying plants commonly

used in the field of ornamental horticulture. These competencies will help qualify him for careers in this area.

PERFORMANCE OBJECTIVES

Upon completion of this unit, the student will be able to

I. In identification of ornamental plants

A. Use plant vocabulary.
B. Identify plants by common names.
C. Refer to and identify plants by scientific names.
D. Determine plant identity by using physical appearance and growth habits.
E. Use plant keys to identify.

SUGGESTED ACTIVITIES

I. The instructor will

A. Discuss goal and objectives relative to career entry.
B. Motivate through demonstration.
C. Provide students with information sheets and study guides.
D. Use locally developed slides of different plants.
E. Plan and conduct a tour of local nursery or garden center.
F. Provide samples of different plants.
G. Provide commercial literature containing botanical names.
H. Demonstrate and discuss procedures outlined in information sheets and study guides.
I. Evaluate and test.

II. The student will

A. Review information sheet and study guide.
B. Discuss performance objectives.
C. Tour local nursery.
D. Compare samples of plants.
E. Demonstrate ability to accomplish skills.
F. Take test.

INSTRUCTIONAL MATERIALS

I. Instructional materials included in this unit

A. Information sheets and study guides
B. Locally developed slides
C. Samples of plants
D. Catalogs
E. Test

II. References

Bailey, L.H. The Standard Cyclopedia of Horticulture, New York: The MacMillan Company.

Moon, Thurman: Mann, Paul and Otto, James. Modern Biology. New York: Henry Holt and Company.

Identifying Horticultural Plants, Module No. 2., the Center for Research and Leadership Development in Vocational and Technical Education, The Ohio State University, 980 Kennear Rodd, Columbus, Ohio 43212.

UNIT VI

PROPAGATING HORTICULTURAL PLANTS

GOAL

Upon completion of this unit, which consists of approximately 30 hours of instruction, the student will be able to successfully propagate ornamental plants. These competencies will enable him to enter into an ornamental horticulture career.

PERFORMANCE OBJECTIVES

Upon completion of this unit, the student will be able to

I. In producing plants from seed

- A. Describe the function of various parts of a seed.
- B. Select and recommend good seed.
- C. Test seed for germination and viability.
- D. Use proper seed storage techniques.
- E. Harvest and prepare seed for planting.
- F. Prepare proper seedbed.
- G. Treat seed with appropriate chemicals.
- H. Plant seed properly.
- I. Care for seedlings properly.

II. In producing plants from cuttings

- A. Describe the various types of cuttings.
- B. Determine proper time to make cuttings.
- C. Determine the type of cutting to use.
- D. Select the best media for rooting.
- E. Provide the proper environmental conditions.
- F. Treat the cuttings with appropriate chemicals.
- G. Place cuttings in media.
- H. Care for cuttings during rooting.
- I. Determine proper time to transplant.

III. In producing plants by layerage, budding and grafting

A. Describe and perform layerage, budding and grafting operations.
B. Determine the type and time of operation.
C. Select and use proper equipment.
D. Care for plants following operation.

IV. In constructing and using equipment required for plant propagation

A. Determine material needs for construction of various equipment.
B. Draw to scale sketches of containers.
C. Construct flats, planters, and other containers.
D. Use equipment and containers effectively.

SUGGESTED ACTIVITIES

I. The instructor will

A. Discuss goal and objectives relative to career entry.
B. Motivate through demonstration.
C. Provide students with information sheets and study guides.
D. Plan and conduct a tour of a local nursery.
E. Use school greenhouse to do practical propagation.
F. Demonstrate and discuss procedures outlined in information sheets and study guides.
G. Evaluate and test.

II. The student will

A. Review information sheets and study guides.
B. Discuss performance objective.
C. Tour local nursery.
D. Propagate plants in school greenhouse.
E. Take test.

INSTRUCTIONAL MATERIALS

I. Instructional materials in this unit

A. Information sheets and study guides
B. School greenhouse
C. Samples of cuttings, grafts and seeds
D. Catalogs
E. Test

II. References

Plant Propagation in Pictures. Montague Tree. Garden City, New York: The American Garden Guild, Inc.

Hartman, Hudson T. and Dale E. Kester. Plant Propagation: Principles and Practice. Englewood Cliffs, New Jersey: Prentice-Hall, Inc.

Propagating Horticultural Plants, Module No. 3. The Center for Research and Leadership Development in Vocational and Technical Education, The Ohio State University, 980 Kinnear Road, Columbus, Ohio 43212.

UNIT VII

GROWING HORTICULTURAL PLANTS

GOAL

Upon completion of this unit, which consists of approximately 20 hours of instruction, the student will have developed abilities and skills necessary in growing horticultural plants. These competencies will enable him to enter into an ornamental horticulture career.

PERFORMANCE OBJECTIVES

Upon completion of this unit, the student will be able to

I. In controlling the environmental factors affecting plant growth

- A. Describe and identify the effects of plants growing under adverse environmental conditions.
- B. Control the factors that affect plant growth by using plant growing structures effectively.
- C. Construct plant growing structures that will enhance plant growth.
- D. Locate plants within the growing structures to provide best environmental conditions.

II. In planting and transplanting seedlings, pot plants, annuals, perennials, shrubs and trees

- A. Plan a planting using appropriate factors of time, kind of plants, and spacing of plants.
- B. Prepare a planting bed that will meet the chemical and physical requirements of various plants.
- C. Plant and transplant various plants according to recommended procedures.

III. In using cultural practices for growing high quality plants

A. Fertilize and water properly.
B. Mulch and cultivate plants according to recommended procedures.
C. Identify and control plant pests.
D. Prune and train plants effectively.

SUGGESTED ACTIVITIES

I. The instructor will

A. Discuss goal and objectives relative to career entry.
B. Motivate through demonstration.
C. Provide student with information sheets and study guides.
D. Plan and conduct a tour of local landscape plantings.
E. Use school campus to do practical plantings.
F. Demonstrate and discuss procedures outlined in information sheets and study guides.
G. Evaluate and test.

II. The student will

A. Review information sheets and study guides.
B. Discuss performance objectives.
C. Tour local landscape plantings.
D. Prepare and plant a bed on school campus.
E. Take test.

INSTRUCTIONAL MATERIALS

I. Instructional materials in this unit

A. Information sheets and study guides.
B. School campus
C. Locally developed slides of plantings
D. Catalogs
E. Test

II. References

Nelson, Kennard S. Flower and Plant Production in the Greenhouse. Danville, Illinois: Interstate

Christopher, E. P. The Pruning Handbook. New York: The MacMillan Company.

Pruning Handbook, Publication No. 28, Brooklyn Botanic Garden, Baltimore, Maryland.

Ball, George J. The Ball Red Book. W. Chicago, Illinois: George J. Ball.

Cononer, H.S. Grounds Maintenance Handbook. New York: McGraw-Hill Publishing Company.

UNIT VIII

SOIL AND OTHER PLANT GROWING MEDIA

GOAL

After completing this unit, which requires approximately 20 hours of instruction, the student will be able to use soil and other plant growing media effectively. These skills will help the student in an ornamental horticulture career.

PERFORMANCE OBJECTIVES

After completing this unit, the student will be able to

I. Concerning the relation of plant watering practices to soil structure

- A. Understand movement of water through soil.
- B. Explain factors which affect water holding capacity of soils.
- C. Identify and describe the effects of overwatering and underwatering.
- D. Improve soil structure in order to improve water holding capacity.

II. Concerning the recognition and effective use of soil conditioners

- A. Describe and explain the uses of the common soil conditioners.
- B. Prepare and use different types of soil mix.
- C. Explain the need for and advantages of soil conditioners.

III. Concerning soil mulches

- A. Explain their use in the landscape.
- B. Describe the kinds of mulches.
- C. Understand when and how to apply mulch.
- D. Explain the use of fertilizer with mulching materials.

IV. Concerning soil organisms and their effect on plant growth

- A. Name and classify the major soil organisms as to their main activity and whether they are harmful or beneficial.
- B. Control harmful soil organisms.
- C. Maintain and conserve helpful organisms.

V. Concerning soil preparation

- A. Use practices that will improve soil tilth.
- B. Use practices which will add organic matter to the soil.
- C. Describe the effect that soil moisture has on soil preparation.

SUGGESTED ACTIVITIES

I. The instructor will

A. Discuss the goal and objectives relative to career entry.
B. Provide information sheets and study guide.
C. Provide samples of soil types.
D. Provide samples of mulches.
E. Test and evaluate students.

II. The student will

A. Review information sheets.
B. Identify types of soils.
C. Describe uses of mulches.
D. Be tested and evaluated.

INSTRUCTIONAL MATERIALS

I. Included in this unit

A. Information sheets and study guide
B. Samples of soil and mulches
C. Films and slides on water movement in soils
D. Tests

II. References

Donahue, Roy L. Our Soils and Their Management.

Janick, Jules. Horticultural Science. San Francisco: W. J. Freeman Company.

Mulching Materials, Ohio State Experiment Station Publication.

UNIT IX

ESTABLISHING AND CARING FOR LAWNS AND TURF

GOAL

After completion of this unit, which requires approximately 20 hours of instruction, the student will have developed the skills required to plan, establish and maintain a lawn. He will also be able to renovate poorly developed lawns. These skills will help prepare the student for a career in ornamental horticulture.

PERFORMANCE OBJECTIVES

After completing this unit, the student will be able to

I. In planning and establishing a lawn

- A. Explain the economic conservation and esthetic value of lawns.
- B. Carry out steps in planning a lawn.
- C. Carry out procedure for establishing a lawn.
- D. Use and install all drainage materials when required.

II. In maintaining and renovating lawns

- A. Describe the factors that determine frequency, height and techniques of mowing.
- B. Select and use proper type of mowers and other lawn care equipment.
- C. Determine amount and time of watering.
- D. Select and use proper watering equipment.
- E. Determine proper kind, amount, time and method of application of fertilizer.
- F. Use approved methods to control weeds and other lawn pests.
- G. Describe and carry out procedures in lawn renovations.

SUGGESTED ACTIVITIES

I. The instructor will

- A. Discuss goal and objectives relative to career entry.
- B. Provide information sheets and study guide.
- C. Conduct field trip to identify conditions studied in the unit.
- D. Demonstrate use of equipment needed in establishing and maintaining lawns.
- E. Discuss procedures outlined in information sheets and study guide.
- F. Test and evaluate students.

II. The student will

- A. Review information sheets and study guide.
- B. Maintain lawns at home or at school according to approved procedures.
- C. Prepare plan for maintenance of lawns.
- D. Demonstrate ability to operate equipment used in establishing and maintaining lawns.
- E. Demonstrate other skills learned in unit.
- F. Be tested and evaluated.

INSTRUCTIONAL MATERIALS

I. Included in the unit

- A. Information sheets and study guide
- B. Films and slides illustrating lawn care practices
- C. Samples of plants used for lawns
- D. Tests

II. References

Conover, H.S. Grounds Maintenance Handbook. Second Edition. New York: McGraw-Hill Book Company.

Musser, H.B. Turf Management. New York: McGraw-Hill Book Company.

The Lawn Book. New York: The MacMillan Company.

UNIT X

RECOGNIZING AND CONTROLLING PLANT PESTS

GOAL

After completing this unit, which requires approximately 25 hours of instruction, the student will have developed the skills needed in the recognition and control of pests affecting horticultural plants. Development of these skills will aid in the pursuit of a career in ornamental horticulture.

PERFORMANCE OBJECTIVES

After completing this unit, the student will be able to

I. In recognizing symptoms of pests

- A. Name various plant pests.
- B. Recognize plant damage caused by various pests.

II. In identifying plant pests

- A. Classify plant pests.
- B. Name common fungi and tell how they affect plants.
- C. Identify common weeds.
- D. Explain how viruses infect plants.
- E. Describe how insects damage plants.
- F. Describe damage caused by animals.
- G. Identify environmental factors that affect ornamental plants.

III. In controlling plant pests

- A. Describe basic ways of controlling pests of horticultural plants.
- B. Identify pest-resistant varieties.
- C. Demonstrate the safe handling of chemicals.
- D. Use mechanical means of controlling pests.
- E. Use mulches to control pests.
- F. Select proper chemicals for controlling pests.
- G. Apply chemicals for approved practices.
- H. Operate spraying and dusting equipment.

SUGGESTED ACTIVITIES

I. The instructor will

A. Discuss goal and objectives relative to career entry.
B. Provide information sheets and study guide.
C. Demonstrate and discuss procedures outlined in information sheets.
D. Provide samples of pest damaged plant materials.
E. Test and evaluate students.

II. The student will

A. Review information sheets and study guides.
B. Demonstrate abilities developed in identification and control of plant pests.
C. Be tested and evaluated.

INSTRUCTIONAL MATERIALS

I. Included in this unit

A. Information sheets and study guide
B. Samples of pest damaged plants
C. Pictures of plant pests.
D. Charts on spraying and dusting
E. Mulching materials
F. Tests

II. References

Pirone, Dodge, and Rukett. Diseases of Ornamental Plants.

Pirone, Dodge, and Rukett. Diseases and Pests of Ornamental Plants.

Insects, USDA Yearbook of Agriculture.

Story of Farm Chemicals, Public Relations Department, E.E. Dupont, DeNemours and Company, Wilmington, Delaware.

UNIT XI

JOB PROCUREMENT

Refer to: FARM SUPPLIES AND EQUIPMENT - UNIT XII

UNIT XII

HUMAN RELATIONS

Refer to: FARM MACHINERY SALES AND SERVICE - UNIT XIV

UNIT XIII

SALESMANSHIP

Refer to: FARM MACHINERY SALES AND SERVICE - UNIT XIII

UNIT XIV

BUSINESS MATHEMATICS

Refer to: FARM SUPPLIES AND EQUIPMENT - UNIT XIV

UNIT XV

GENERAL PRINCIPLES OF BUSINESS

Refer to: FARM SUPPLIES AND EQUIPMENT - UNIT XI

WILDLIFE AND RECREATION

Description: Wildlife and recreation occupations are those requiring technical and professional skills that can be offered at the high school level. A high school vocational agriculture student will be given opportunities to receive training in farm mechanics, production problems, and business management related wildlife and recreation. Students pursuing this training have previously selected this area as their career objective and the material is designed to prepare them for job entry in the field of wildlife and recreation.

The wildlife and recreation family consists of the following units of instruction:

UNIT I

SMALL ENGINES AND EQUIPMENT

Refer to: FARM MACHINERY SALES AND SERVICE - UNIT V

UNIT II

BUILDING, MAINTAINING, AND RENOVATING WILDLIFE AND RECREATIONAL STRUCTURES

GOAL

After completion of this unit, which consists of approximately 20 hours of instruction, the student will have competencies in building, maintaining, and renovating wildlife and recreational structures. These skills will prepare the student for a career in wildlife and recreation.

PERFORMANCE OBJECTIVES

Upon completion of this unit, the student will be able to

I. In construction materials

- A. Identify the different materials by kind and grade.
- B. Figure cost of different materials.
- C. Figure a bill of materials for a building.
- D. Recommend appropriate materials for a given job.

II. In type and design of structures

- A. Identify the different types and designs.
- B. Follow blueprints for dimensions and specifications.
- C. Select structures based on use and climate conditions.
- D. Utilize professional services available.

III. In maintenance and care of wildlife and recreational structures

A. Plan a building maintenance and improvement program.
B. Estimate the materials and repair cost for a building.
C. Select the appropriate material.
D. Determine the equipment needed.
E. Carry out a building maintenance and repair program.

SUGGESTED ACTIVITIES

I. The instructor will

A. Discuss goals and objectives relative to career entry.
B. Motivate through demonstration.
C. Provide students with information sheets and study guides.
D. Plan and conduct a class visit of a wildlife and recreation structure.
E. Use locally developed slides of recreational structures.
F. Demonstrate and discuss procedures outlined in information sheets and study guides.
G. Have a resource person speak to class.
H. Evaluate and test.

II. The student will

A. Study information sheet and study guide.
B. Demonstrate ability to perform skills.
C. Tour a local wildlife structure.
D. Take test.

INSTRUCTIONAL MATERIALS

I. Instructional materials included in this unit

A. Information sheets and study guides
B. Locally developed slides
C. Plans of wildlife and recreational structures
D. Test

II. References

A Primer of Blueprint Reading. Diamond Bruce Publishing Company, Milwaukee, Wisconsin.

Griffity, Ira S., Carpentry. The Manual Arts Press, Peoria, Illinois.

Wooley, J. D. Repairing and Constructing Farm Buildings. McGraw-Hill Book Company Inc., New York.

UNIT III

ESTABLISHING AND MAINTAINING A SHOP

GOAL

After completion of this unit, which consists of approximately 15 hours of instruction, the student will understand the advantages of establishing a shop. He will be able to arrange and maintain a shop for the convenient and efficient operation necessary in wildlife and recreation careers.

PERFORMANCE OBJECTIVES

Upon completion of this unit, the student will be able to

I. In arranging a shop

- A. Consider the factors affecting shop planning.
- B. Determine requirements.
- C. Plan and arrange a shop for safe, convenient and efficient operation.

II. In selecting and requisitioning shop equipment and supplies

- A. Determine equipment and supply needs.
- B. Evaluate equipment and supplies available from different vendors.
- C. Select and requisition appropriate supplies and equipment.

III. In maintenance and care of tools and equipment

- A. Utilize safety practices.
- B. Perform preventive maintenance and servicing.
- C. Fit and shape tools properly.
- D. Clean and store tools.

SUGGESTED ACTIVITIES

I. The instructor will

- A. Discuss goals relative to career entry.
- B. Motivate through demonstration.
- C. Provide students with information sheets and study guides.
- D. Provide shop plans for evaluation and study.
- E. Demonstrate and discuss procedures outlined in information sheets and study guides.
- F. Evaluate and test.

II. The student will

A. Study information sheets and study guides.
B. Demonstrate ability to perform skills.
C. Review shop plans.
D. Plan a shop.
E. Take test.

INSTRUCTIONAL MATERIALS

I. Instructional materials included in this unit

A. Information sheets and study guides
B. Plans of shop buildings
C. Catalogs and commercial literature
D. Test

II. References

Wakeman, T. J., McCoy, Lee Vernon, The Farm Shop. The MacMillan Company, New York.

Roehl. Fitting Farm Tools. Milwaukee, Wisconsin. The Bruce Publishing Company.

Sampson, Mowery and Kugler. Farm Shop Skills in Merchanized Agriculture. Chicago, American Technical Society.

UNIT IV

MAINTENANCE AND OPERATION OF TRACTORS AND ALLIED EQUIPMENT

Refer to: CROPS, FORESTRY AND SOIL CONSERVATION - UNIT II

UNIT V

IRRIGATION SYSTEMS

GOALS

Upon completion of this unit, which consists of approximately 10 hours of instruction, the student will have developed abilities necessary for job entry into careers dealing with the planning, installing and servicing of irrigation systems.

PERFORMANCE OBJECTIVES

Upon completion of this unit, the student will be able to

I. In planning, installing and servicing of irrigation systems

A. Plan an irrigation system using different sources of water.
B. Select appropriate equipment for the type of system used.
C. Install equipment.
D. Maintain system.

SUGGESTED ACTIVITIES

I. The instructor will

A. Discuss goals and objectives relative to career entry.
B. Motivate through demonstration.
C. Provide students with information sheets and study guides.
D. Plan and conduct a class visit of local irrigation systems.
E. Use locally developed slides of irrigation systems.
F. Demonstrate and discuss procedures outlined in handout material.
G. Have a resource person speak to class.
H. Evaluate and test.

II. The student will

A. Study information sheets and study guides.
B. Demonstrate ability to perform skills.
C. Tour local irrigation systems.
D. Review commercial literature.
E. Take test.

INSTRUCTIONAL MATERIALS

I. Instructional materials included in this unit

A. Information sheets and study guides
B. Locally developed slides
C. Commercial literature
D. Plans and specifications for irrigation systems
E. Test

II. References

Code, W. E. and A. J. Hammon. When To Use Sprinkler System. Colorado Agriculture and Mechanics College. Bulletin 405 - A. 1950.

Commercial Literature, Irrigation Supply Companies.

Schwab, Glen O., Richard K. Frwert and Kenneth Barnes. Manual of Soil and Water Conservation and Engineering. Dubuque, Iowa William C. Brown Company.

Morr, James C. The Border Method of Irrigation. College of Agriculture, University of California. Circular 468.

UNIT VI

INSECT, DISEASE AND PEST CONTROL

GOAL

After completion of this unit, which consists of approximately 30 hours of instruction, the student will have developed a working knowledge of the control of insects, diseases and pests. He will understand the regulations concerning the use of chemicals.

PERFORMANCE OBJECTIVE

After completion of this unit, the student will be able to

I. In agriculture chemicals use and regulations

- A. Use terminology.
- B. Identify the types and physical characteristics of chemicals.
- C. Use chemicals.
- D. Understand the laws and regulations governing chemicals.
- E. Utilize and recommend safety precautions in handling chemicals.
- F. Interpret labels on containers.

II. In pest control

- A. Identify pests.
- B. Understand life cycle and habitats of insects.
- C. Demonstrate methods and procedures used to control insects and diseases.
- D. Understand the conditions under which chemicals function best.
- E. Recommend appropriate methods and practices for pest control.

III. In prevention and control of plant diseases associated with wildlife and recreation

- A. Analyze economic damage done by diseases.
- B. Identify symptoms.
- C. Recommend and apply preventive and control measures.
- D. Utilize physiological factors to control diseases.
- E. Prepare diseases specimen for shipment.
- F. Utilize state and federal agencies to combat diseases.

SUGGESTED ACTIVITIES

I. The instructor will

A. Discuss goals and objectives relative to career entry.
B. Motivate through demonstrations.
C. Invite consultants to lecture on insect and disease control.
D. Provide a collection of diseases affecting ornamental plants.
E. Demonstrate and discuss procedures outlined in information sheets and study guides.

II. The student will

A. Review information sheets and study guides.
B. Demonstrate proficiency to accomplish skills.
C. Be tested and evaluated.

INSTRUCTIONAL MATERIALS

I. Included in this unit

A. Information sheet
B. Study guides
C. Collection of diseases
D. Films and filmstrips on indentification of diseases in ornamental plants
E. State and federal laws regulating the use of chemicals
F. Test

II. References

Fernold and Shepard. Applied Entomology. New York, McGraw-Hill Book Company, 1955.

Preston, J. F. Developing Farm Woodlands. New York, McGraw-Hill Company, 1954.

Wing, L. W. Practice of Wildlife Conservation. New York. John Wiley and Sons, Inc. 1951.

USDA Yearbook. Plant Diseases. 1953, Washington, D.C., Superintendent of Documents.

UNIT VII

GAME AND FISH MANAGEMENT

GOAL

After completion of this unit, which requires approximately 20 hours of instruction, the student will have developed abilities and understandings of game and fish management. The competencies will prepare students for occupations in wildlife and recreation.

PERFORMANCE OBJECTIVES

After completion of this unit, the student will be able to

I. In classification, characteristics and management of game species

- A. Identify types of game.
- B. Understand feeding and breeding habits.
- C. Understand conservation practices and laws.

II. In multiple use of forest lands

- A. Survey forest land available in the community.
- B. Control burn for game.
- C. Select cuts for deer browse.
- D. Plant appropriate varieties for game feed.

III. In fish and pond management

- A. Select and apply appropriate fertilizers.
- B. Demonstrate a knowledge of weed control.
- C. Understand the procedures for stocking a fish pond.
- D. Understand the procedures for harvesting fish.
- E. Demonstrate proper handling of fish and care of equipment.
- F. Care and maintain a fish pond.

IV. In wildlife income

- A. Evaluate job opportunities.
- B. Raise wildlife.

V. In wildlife predator control

- A. Identify predators.
- B. Demonstrate methods of controlling predators.

SUGGESTED ACTIVITIES

I. The instructor will

- A. Discuss goals and objectives relative to career entry.
- B. Invite an agent from the enforcement department to discuss laws and regulations.

C. Use audio-visual aids.
D. Demonstrate and discuss procedures outlined in information sheets and study guides.
E. Test and evaluate.

II. The student will

A. Review information sheets and study guides.
B. Demonstrate ability to accomplish skills.
C. Be tested and evaluated.

INSTRUCTIONAL MATERIALS

I. Included in this unit

A. Information sheets
B. Study guides
C. Charts, films and pamphlets from the State Wildlife and Fisheries Commission
D. State laws and regulations
E. Test

II. References

Wing, Leonard. Practice of Wildlife Conservation. John Wiley and Sons, Inc., New York, 1951.

Bulletins from Department of the Interior, Bureau of Outdoor Recreation, Washington, D. C. 20240.

Bulletins from State Parks and Recreation Commission, Leroy A. Talley, Director of State Parks and Recreation, Old State Capitol Building, P. O. Drawer 1111, Baton Rouge, Louisiana 70803.

UNIT VIII

CARE OF ANIMALS USED FOR RECREATIONAL PURPOSES

GOALS

After completion of this unit, which requires approximately 20 hours of instruction, the student will have developed the skills to care for animals used for recreational purposes. These competencies will prepare him for a career in wildlife and recreation.

PERFORMANCE OBJECTIVES

After completion of this unit, the student will be able to

I. In caring for animals

- A. Understand the digestive systems of animals.
- B. Calculate rations for different kinds of animals.
- C. Classify feeds.
- D. Diagnose symptoms and recommend treatments.
- E. Use equipment for providing sanitary conditions.
- F. Groom animals.
- G. Provide proper housing for different kinds of animals.

II. In training animals

- A. Select animals.
- B. Follow procedures for gentling and posing animals.
- C. Train animals.
- D. Teach tricks to small animals.

SUGGESTED ACTIVITIES

I. The instructor will

- A. Discuss goals and objectives relative to career entry.
- B. Provide students with information sheets and study guides.
- C. Furnish collection of feed samples.
- D. Conduct tour to a recreational facility to observe housing, feeding and training of animals used for recreational purposes.
- E. Use audio-visual aids.
- F. Demonstrate and discuss procedures outlined in information sheets and study guides.
- G. Test and evaluate.

II. The student will

- A. Review information sheets and study guides.
- B. Go on tour.
- C. Demonstrate ability to accomplish skills.
- D. Be tested and evaluated.

INSTRUCTIONAL MATERIALS

I. Included in this unit

- A. Information sheets
- B. Study guides
- C. Audio-visual aids
  1. Charts
  2. Pictures illustrating structures
  3. Commercial literature
  4. Color slides

D. Test

II. References

Ensminger, M.E. Stockman's Handbook. Danville, Illinois. Interstate Printers and Publishers.

Greenburg, D. B. Raising Game Birds in Captivity. Fort Atkinson, Wisconsin. National Agricultural Supply Company.

Morrison, F.B. Feeds and Feeding. Ithaca, New York. Morrison Publishing Company, 1956.

Sohn, David. How to Train Your Dog. T.F.H. Publications.

USDA Yearbook - Keeping Livestock Healthy. Washington, D. C., Superintendent of Documents, 1942.

UNIT IX

CARE OF PLANTS AND SOILS

GOAL

After completing this unit, which requires approximately 25 hours of instruction, the student will have developed skills associated with the care of plants and soils. These skills will help the student enter a career in wildlife and recreation.

PERFORMANCE OBJECTIVES

After completing this unit, the student will be able to

I. In producing plants from seed

- A. Describe the functions of the various parts of seed.
- B. Select and recommend good seed.
- C. Test seed for germination and viability.
- D. Store seed properly.
- E. Prepare seed for planting.
- F. Prepare proper seedbed.
- G. Plant seed properly.
- H. Care for seedlings.

II. In propagation by cuttings

- A. Describe and identify types of cuttings.
- B. Describe factors which affect success in making and rooting cuttings.
- C. Determine type of cutting to use.
- D. Select best media for cutting.

E. Treat cuttings with appropriate material.
F. Provide proper environmental conditions.
G. Place cuttings in media.
H. Care for cuttings during rooting.
I. Prepare cuttings for transplanting.

III. In propagation by grafting, budding and layerage

A. Describe and perform grafting, budding and layerage operations.
B. Determine type and time of operation.
C. Select and use proper equipment.
D. Care for plants after the operation.

IV. In soil preparation

A. Operate equipment and machinery used in soil preparation.
B. Describe methods used in preparing different soils.
C. Describe requirements of a good seedbed.
D. Describe the importance of good drainage.

V. In fertilization

A. Recommend appropriate type of fertilizer to use in different situations.
B. Explain the functions of the various plant nutrients.
C. Identify deficiency symptoms.
D. Describe correct methods of applying fertilizer.

VI. In pruning, trimming, and caring for plants

A. Explain the functions of pruning.
B. Describe methods of pruning different types of trees and shrubs.
C. Identify and explain use of pruning tools.
D. Name the kinds of trees and hedges that should be trimmed.
E. Describe methods and advantages of trimming.
F. Discuss various methods of cultivating plants.
G. Carry out correct watering practices.
H. Use approved methods of controlling insects and diseases.

SUGGESTED ACTIVITIES

I. The instructor will

A. Discuss goals and objectives relative to career entry.
B. Provide information sheets and study guide.
C. Demonstrate procedures outlined in information sheets.
D. Provide samples of plant materials.
E. Test and evaluate students.

II. The student will

A. Review information sheets and study guide.
B. Demonstrate abilities learned in lesson.
C. Be tested and evaluated.

INSTRUCTIONAL MATERIALS

I. Included in this unit

A. Samples of plant materials
B. Information sheets and study guide
C. Charts
D. Slides and filmstrips
E. Test

II. References

Conover, H. S. Ground Maintenance Handbook. McGraw-Hill Book Company, New York.

Steffek, Edwin F. Pruning Made Easy. Henry Holt and Company, New York.

Wells, James S. Plant Propagation Practices. The MacMillan Company, New York.

UNIT X

RECREATIONAL PROJECTS FOR INCOME

GOAL

After completing this unit, which requires approximately 10 hours of instruction, the student will have developed the skills needed for operating, supervising and maintaining recreational projects. These skills will help a student in a wildlife and recreation career.

PERFORMANCE OBJECTIVES

After completing this unit, the student will be able to

I. Concerning projects dealing with game and fish

A. Explain fishing and hunting laws, limits and seasons.
B. Explain laws, limits and seasons in shooting preserves.
C. Explain privileges of hunting clubs and laws affecting them.
D. Demonstrate shooting and fishing safety practices.

II. Concerning the projects for recreational income

A. Maintain and operate camping facilities.
B. Care for horses, stables and riding equipment.
C. Develop riding trails.
D. Care for and maintain recreational areas in city, state and national parks.
E. Care for and maintain boating and skiing equipment.
F. Demonstrate safety practices associated with various types of outdoor recreation.

SUGGESTED ACTIVITIES

I. The instructor will

A. Discuss goals and objectives relative to career entry.
B. Provide information sheets and study guide.
C. Demonstrate procedures and practices outlined in information sheets.
D. Test and evaluate students.

II. The student will

A. Review information sheets and study guide.
B. Demonstrate skills learned.
C. Be tested and evaluated.

INSTRUCTIONAL MATERIALS

I. Included in this unit

A. Information sheets and study guide
B. Equipment used in outdoor recreation
C. Copies of laws governing outdoor recreation activities
D. Pictures of outdoor recreation activities
E. Tests

II. References

Wing, Leonard W. Practice of Wildlife Conservation. John Wiley and Sons, Inc., New York.

Hooner, Norman K. Handbook of Agriculture Occupations. The Interstate Printers and Publishers Inc., Danville, Illinois.

Pamphlets from Department of the Interior, Bureau of Outdoor Recreation, Washington, D. C.

UNIT XI

WILDLIFE AND RECREATION COMMUNICATION

GOAL

After completing this unit, which requires approximately 10 hours of instruction, the student will have developed the necessary communication skills required for a career in wildlife and recreation.

PERFORMANCE OBJECTIVES

After completing this unit, the student will be able to

I. Concerning communication media

- A. Identify various communication media.
- B. Identify factors to consider in reaching people concerned with wildlife and recreation through use of various types of communication media.
- C. Operate usual aid equipment.
- D. Coordinate and use all methods in getting information to people concerned with wildlife preservation.

II. Concerning the analysis of reports

- A. Identify sources of data.
- B. Explain factors to consider in selecting materials to get information.
- C. Use the "Inverted Pyramid" approach.
- D. Breakdown analytical data into a news story.

SUGGESTED ACTIVITIES

I. The instructor will

- A. Discuss goals and objectives relative to career entry.
- B. Provide information sheets and study guide.
- C. Demonstrate skills outlined in information sheets.
- D. Test and evaluate students.

II. The student will

- A. Review information sheets.
- B. Write news story.
- C. Demonstrate skills used in operating usual aid equipment.
- D. Be tested and evaluated.

INSTRUCTIONAL MATERIALS

I. Included in this unit

A. Audio-visual equipment
B. Information sheets and study guide
C. News articles
D. Tests

II. References

Fitzgerald, S.E. Communicating Ideas to the Public. New York: Modern Industry Magazine.

Read, Hadley. Getting Information to Farm Families. Urbana, Illinois. University of Illinois. College of Agriculture, 1955.

Louisiana Agriculture Extension Service, Baton Rouge, Louisiana
"Justify Your Job With Good Reports," Publication 1308
"Recipe for Writing the Ag. News Story," Publication 1100
"Snappy Styles for Your Bulletin," Publication 1090
"When You Write A Newspaper Column," Publication 1178

UNIT XII

ORNAMENTAL HORTICULTURE

Refer to: ORNAMENTAL HORTICULTURE - UNITS V and IX

UNIT XIII

ORIENTATION AND SCOPE OF WILDLIFE AND RECREATION OCCUPATIONS

GOAL

After completion of this unit, which consists of approximately 5 hours of instruction, the student will have developed an understanding of the business principles and procedures necessary for entry into wildlife and recreation careers.

PERFORMANCE OBJECTIVES

Upon completion of this unit, the student will be able to

I. Concerning the american free enterprise system

- A. Understand the basic principles of the american free enterprise system.
- B. Function in american business within the regulations and limitations imposed by government.
- C. Understand the use of labor, capital and management as factors of production.

II. In wildlife and recreation opportunities in the community

- A. Identify common types of businesses.
- B. Identify common wildlife and recreation careers.
- C. Understand educational and experience requirements for each career.

SUGGESTED ACTIVITIES

I. The instructor will

- A. Discuss goals and objectives relative to career entry.
- B. Motivate through demonstration.
- C. Provide students with information sheets and study guides.
- D. Have a businessman talk to class.
- E. Demonstrate and discuss procedures outlined in information sheets and study guides.
- F. Evaluate and test.

II. The student will

- A. Review information sheets and study guides.
- B. Study goals and performance objectives.
- C. Review literature from state and federal wildlife and recreation departments.
- D. Take test.

INSTRUCTIONAL MATERIALS

I. Included in this unit

- A. Information sheets
- B. Study guides
- C. Government literature
- D. Test

II. References

Hoover, Handbook of Agricultural Occupations. The Interstate Printers and Publishers, Inc. Danville, Illinois, 1963.

Jobs in Agriculture. Job Family Series 11, Science Research Association, Inc., 259 East Erie, Chicago, Illinois, 1960.

Glos Baker. Introduction to Business. Cincinnati: South-Western Publishing Company, 1963.

Wilson, Harmon and Elwin Eyster. Consumer Economic Problems. South-Western Publishing Company, Chicago, 1961.

UNIT XIV

JOB PROCUREMENT

Refer to: FARM SUPPLIES AND EQUIPMENT - UNIT XII

UNIT XV

ORGANIZATION AND MANAGEMENT OF BUSINESS

Refer to: FARM SUPPLIES AND EQUIPMENT - UNIT XI

UNIT XVI

SALES PROMOTION

Refer to: FARM MACHINERY SALES AND SERVICE - UNIT XIII

FARM SERVICES

Description: Farm service occupations are those requiring technical and professional skills that can be offered at the high school level. A vocational agriculture student will receive training in farm mechanics, production problems and business management related to farm service careers. Students pursuing this training have previously selected this area as their career objective and the material is designed to prepare them for jobs that involve servicing the farmer with supplies, farm power and equipment or educational services.

The farm service family consists of the following units of instruction:

UNIT I

SMALL ENGINES AND EQUIPMENT

Refer to: FARM MACHINERY SALES AND SERVICE - UNIT V

UNIT II

MAINTENANCE AND OPERATION OF TRACTORS AND ALLIED EQUIPMENT

Refer to: CROPS, FORESTRY AND SOIL CONSERVATION - UNIT II

UNIT III

FARM WELDING

Refer to: FARM MACHINERY SALES AND SERVICE - UNIT I

UNIT IV

FARM AND HOME CONVENIENCES AND SANITATION

GOAL

Upon completion of this unit, which consists of approximately 15 hours of instruction, the student will have competencies in planning, installing and servicing home and farm conveniences and sanitation systems. These skills will prepare the student for entry in a farm service career.

PERFORMANCE OBJECTIVES

Upon completion of this unit, the student will be able to:

I. Concerning the planning, installing and servicing of water system equipment

- A. Determine water requirements.
- B. Select and plan a system that meets water requirements.
- C. Estimate amount and cost of materials and tools needed.
- D. Install system using proper equipment and fixtures.
- E. Service and maintain a system and its equipment.

II. Concerning planning, installing and servicing a sewage disposal system

- A. Understand the factors involved in selecting a system.
- B. Select and plan a system for a given location.
- C. Estimate amount and cost of materials and tools needed.
- D. Install a system according to Board of Health regulations.
- E. Service and maintain a system properly.

III. Concerning planning, installing and servicing lighting, heating, cooling and refrigerating systems

- A. Plan, install and service different types of lighting systems.
- B. Plan, install and service different types of heating systems.
- C. Plan, install and service different types of cooling and refrigerating systems.

SUGGESTED ACTIVITIES

I. The instructor will

- A. Discuss goals and objectives relative to career entry.
- B. Motivate through demonstrations.
- C. Provide students with information sheets and study guides.
- D. Plan and conduct a tour of businesses that install and service farm and home systems.
- E. Provide catalogs and commercial literature.
- F. Demonstrate and discuss procedures outlined in information sheets and study guides.
- G. Evaluate and test.

INSTRUCTIONAL MATERIALS

I. Included in this unit

A. Information sheets and study guides
B. Catalogs and commercial literature
C. Locally developed slides
D. Plans for various systems
E. Tests

II. References

Brown, Robert H. Farm Electrification, New York, McGraw-Hill, 1956.

Matthias, A.J. Jr. How to Design and Install Plumbing. American Technical Society, 1946 edition.

Richter, Herbert P. Practical Electrical Wiring. New York, McGraw-Hill Book Company, 1947.

"Your Farmhouse Heating," USDA. Miscellaneous Publications, No. 689, 1950.

Campbell, John C. Selecting a Heating System for Your Home. Extension Service, Oregon Street College, Ext. 720, 1953.

UNIT V

IRRIGATION SYSTEMS

Refer to: WILDLIFE AND RECREATION - UNIT V

UNIT VI

FARM SURVEYING

Refer to: CROPS, FORESTRY AND SOIL CONSERVATION - UNIT I

UNIT VII

BUILDING, MAINTAINING AND RENOVATING FARM STRUCTURES

Refer to: WILDLIFE AND RECREATION - UNIT II

UNIT VIII

INSTALLATION OF EQUIPMENT

GOAL

Upon completion of this unit, which consists of approximately 10 hours of instruction, the student will be able to interpret assembly material, determine location and install various types of farm equipment and machinery. These competencies will enable the student to enter careers in farm service.

PERFORMANCE OBJECTIVES

Upon completion of this unit, the student will be able to:

I. Concerning the interpretation of an assembly sheet

- A. Determine proper tools needed for assembly and installation.
- B. Perform assembly and installation procedures in logical sequence.

II. Concerning location of equipment

- A. Recommend a location after considering physical factors of weight, size, service requirements and noise levels.
- B. Analyze and explain the economic value gained from locating the equipment in a particular location.

SUGGESTED ACTIVITIES

I. The instructor will

- A. Discuss goals and objectives relative to career entry.
- B. Motivate through demonstration.
- C. Provide students with information sheets and study guides.
- D. Provide catalogs and assembly sheets.
- E. Provide building plans showing equipment location.
- F. Conduct a tour of school plant indicating location of equipment.
- G. Demonstrate and discuss procedures outlined in study guides and information sheets.
- H. Evaluate and test.

II. The student will

- A. Review information sheets and study guides.
- B. Study goals and performance objectives.
- C. Tour school plant.
- D. Study building plans and commercial materials.
- E. Demonstrate ability to perform skills.
- F. Take test.

INSTRUCTIONAL MATERIALS

I. Included in this unit

A. Information sheets and study guides
B. Catalogs and other commercial literature
C. Building plans with equipment locations
D. Locally developed slides
E. Test

II. References

Matthias, Jr. A. B. How to Design and Install. American Technical Society, Chicago, Illinois.

Farm Mechanics in the School, Bulletin 31-A, South Bend Lathe Work, South Bend, Indiana.

Accessories Manufacturing Corporation. Ramsey - 3693 Forest Park Boulevard, St. Louis, Missouri.

UNIT IX

INSECT, DISEASE AND PEST CONTROL

Refer to: WILDLIFE AND RECREATION - UNIT VI

UNIT X

BREEDING OF LIVESTOCK

GOAL

After completing this unit, which requires approximately 20 hours of instruction, the student will have developed the ability to plan and carry out breeding programs. These competencies will help the student in a farm service career.

PERFORMANCE OBJECTIVES

After completing this unit, the student will be able to

I. Concerning laws of heredity

A. Use terminology correctly.
B. Explain the reasons for variations and similarities that occur.
C. Identify heritable characteristics.
D. Identify dominant and recessive characteristics.
E. Describe function, location and action of chromosomes and genes.

II. Concerning systems of breeding

A. Explain the use of the different breeding systems showing the capabilities and limitations of each.
B. Explain the importance of keeping good records for each system.
C. Identify the systems adapted to the commercial breeder and to the purebred breeder.
D. Recommend a system of breeding for a given situation.

III. Concerning methods of breeding

A. Explain advantages and limitation of artificial breeding.
B. Explain methods of natural breeding and the advantages and limitations of each.
C. Describe the process of collecting, evaluating, processing, storing and shipping semen.
D. Describe procedure of artificial insemination of farm animals.
E. Explain livestock management practices relative to breeding.

IV. Concerning nutritional deficiencies affecting gestation

A. Explain the importance of feed as a major factor affecting fetal development.
B. Work out feed rations that will sustain the mother and fetus.
C. Identify and describe functions of minerals required for normal development of the fetus.
D. Recognize and describe conditions which affect proper fetal development.

SUGGESTED ACTIVITIES

I. The instructor will

A. Discuss goals and objectives relative to career entry.
B. Provide information sheets and study guide.
C. Use charts and slides to illustrate fetal development.
D. Conduct field trip to artificial breeding center.
E. Have insemination technician demonstrate and discuss artificial breeding practices.
F. Test and evaluate students.

II. The student will

A. Review information sheets and study guide.
B. Go on field trip.
C. Review information sheets and study guides.
D. Demonstrate competencies developed in study of unit.
E. Be tested and evaluated.

INSTRUCTIONAL MATERIALS

I. Included in this unit

A. Information sheets and study guides
B. Charts on breeding systems
C. Slides of embryo development
D. Instruments used in artificial insemination
E. Test

II. References

Bundy and Diggins. Livestock and Poultry Production. Prentice-Hall, Inc., Englewood Cliffs, New Jersey.

Lush, J. L. Animal Breeders. Collegiate Press, Inc. Ames, Iowa.

Winters, L. M. Animal Breeding. John Wiley and Company, Inc. New York.

UNIT XI

FEEDING, LIVESTOCK AND POULTRY

Refer to: FARM SUPPLIES AND EQUIPMENT - UNIT IV

UNIT XII

FARM CUSTOM AND RENTAL SERVICES

GOAL

After completing this unit, which requires approximately 5 hours of instruction, the student will have developed the ability to describe and recommend the various custom and rental services used by farm service agencies. This will help the student enter a farm service career.

PERFORMANCE OBJECTIVES

After completing this unit, the student will be able to

I. Concerning farm custom and rental services

A. Identify factors to consider when offering custom and rental services to farmers.
B. Determine rates of various services.
C. Determine machinery and equipment to be used.
D. Evaluate working conditions in custom and rental service occupations.

SUGGESTED ACTIVITIES

I. The instructor will

A. Discuss goals and objectives relative to career entry.
B. Provide information sheets and study guide.
C. Provide for custom operator to talk to class.
D. Test and evaluate students.

II. The student will

A. Review information sheets.
B. Make chart of equipment used and suggested charges for various farm operators.
C. Be tested and evaluated.

INSTRUCTIONAL MATERIALS

I. Included in this unit

A. Information sheets and study guide
B. Charts of custom and rental services
C. Test

II. References

A. Hamilton Bryant. Profitable Farm Management. Prentice-Hall, Inc. Englewood Cliffs, New Jersey.

Hoover, N. K. Handbook of Agricultural Occupations. The Interstate Printers and Publishers, Inc. Danville, Illinois.

Module 10. Adjustment, Maintenance and Repairs of Tillage, Planting, Spraying and Fertilizing Machinery. The Ohio State University, Columbus, Ohio.

UNIT XIII

SANITATION POLICIES AND REGULATIONS

GOAL

After completing this unit, which requires approximately 20 hours of instruction, the student will understand sanitary practices and regulations. This will help the student enter a career in farm services.

PERFORMANCE OBJECTIVES

After completing this unit, the student will be able to

I. Laws and regulations concerning sanitation practices

- A. Identify businesses regulated by sanitation laws.
- B. Explain reasons for sanitation control.
- C. Describe the organization and responsibilities of sanitation control agencies.
- D. Explain requirements for inspectors and technicians.

II. Sanitation practices

- A. Describe sanitation practices involved in marketing of animal and plant products.
- B. Recognize unsanitary conditions and recommend corrections.

III. Economic value

- A. Describe losses due to diseases, insects and parasite of plants and animals.
- B. Describe losses due to contamination and spoilage.
- C. Describe losses due to improper handling and grading.

SUGGESTED ACTIVITIES

I. The instructor will

- A. Discuss goals and objectives relative to career entry.
- B. Provide information sheets and study guide.
- C. Provide copies of various sanitary codes.
- D. Have class visit with local health officer on inspection tour.
- E. Test and evaluate students.

II. The student will

- A. Review information sheets and study guide.
- B. Review sanitary codes.
- C. Go on inspection visit with health officer.
- D. Be tested and evaluated.

INSTRUCTIONAL MATERIALS

I. Included in this unit

- A. Information sheets and study guide
- B. Copies of laws and regulations
- C. Tests

II. References

Duncan, A. D. Food Processing. Revised Edition., Turner E. Smith and Company, Atlanta, Georgia.

Louisiana State Board of Health, New Orleans, Louisiana. Sanitary Code State of Louisiana, Milk, Milk Products and Manufactured Milk Products Regulations.

Louisiana Department of Agriculture and Immigration, Baton Rouge, Louisiana
Apiary Regulations
Eradication and Control of Imported Fire Ant
Louisiana Horticulture Law and Regulations
Regulating the Sale and Purity of Commercial Feeding Stuffs
Regulating the Sale and Purity of Commercial Fertilizers
Regulating the Sale and Purity of Pesticides
Structural Pest Control
Louisiana Seed Law Rules and Regulations

UNIT XIV

PLANNING FARMSTEAD AND LAYOUT

GOAL

After completion of this unit, which consists of approximately 5 hours of instruction, the student will have developed an understanding of how to appraise a farm, and he will be able to plan a farmstead and layout efficiently. These competencies will prepare him for job entry in farm service.

PERFORMANCE OBJECTIVES

After completion of this unit, the student will be able to

I. In program planning for farmstead and layout

A. Use terminology.
B. Identify the functions of the farmstead.
C. Understand the factors affecting the economic value of layouts.
D. Utilize services available in planning farmstead and layout.
E. Lay out a farm.

II. In farm appraisal

A. Use terminology.
B. Identify and apply the appropriate procedures in appraising a farm.
C. Utilize the economic factors in estimating the value of a farm.
D. Appraise a farm.

SUGGESTED ACTIVITIES

I. The instructor will

A. Discuss goals and objectives relative to career entry.
B. Provide students with information sheets and study guides.
C. Provide forms to be used in appraising a farm.
D. Secure appraisal information from insurance companies and other lending agencies.
E. Demonstrate and discuss procedures outlined in information sheets and study guides.
F. Test and evaluate.

II. The student will

A. Review information sheet and study guides.
B. Demonstrate ability to accomplish skills.
C. Be tested and evaluated.

INSTRUCTIONAL MATERIALS

I. Included in this unit

A. Information sheets
B. Study guides
C. Appraisal forms and literature
D. Charts on farm and land values
E. Maps and diagrams of farmstead and layouts
F. Test

I. References

Benake, Raymond R. Managing the Farm Business. John Wiley and Sons, Inc., New York.

Hamilton and Bryant. Profitable Farm Management. Prentice-Hall, Inc., Englewood Cliffs, New Jersey.

USDA Farmers Bulletins—Washington 25, D.C. Planning the Farm for Profit and Stability, No. 1965. Planning the Farmstead, No. 1132.

UNIT XV

PROCESSING AND DISTRIBUTING AGRICULTURAL PRODUCTS

GOALS

After completion of this unit, which consists of approximately 20 hours of instruction, the student will have developed the abilities and skills used in the distribution and processing of agricultural products. These skills will help him gain entry in a farm service career.

PERFORMANCE OBJECTIVES

After completion of this unit, the student will be able to

I. Concerning assembling

- A. Identify methods.
- B. Explain the economic value of assembling.
- C. Follow appropriate procedures.
- D. Utilize cooperative assembling organizations.

II. Concerning grading

- A. Identify grades.
- B. Use equipment.
- C. Grade products according to standards.

III. Concerning transporting

- A. Identify different modes of transportation.
- B. Analyze cost.
- C. Operate common transportation machinery.

IV. Concerning storage and refrigeration

- A. Use terminology.
- B. Determine storage capacity.
- C. Understand the requirements for storage facilities.
- D. Demonstrate the procedures for cleaning and treating storage facilities for newly harvested crops.
- E. Protect crops in storage from diseases, insects and rodents.
- F. Identify and operate a refrigeration unit.
- G. Use different methods of shipping perishable foods.
- H. Prepare commodities for refrigeration.
- I. Arrange products in a locker or freezer.

SUGGESTED ACTIVITIES

I. The instructor will

A. Discuss goals and objectives relative to career entry.
B. Provide students with information sheets and study guides.
C. Conduct tour to a processing and distribution center to observe operations.
D. Invite consultant to talk to the class.
E. Use visual aids.
F. Demonstrate and discuss procedures outlined in information sheets and study guides.
G. Test and evaluate.

II. The student will

A. Review information sheets and study guides.
B. Go on tour.
C. Demonstrate ability to accomplish skills.
D. Be tested and evaluated.

INSTRUCTIONAL MATERIALS

I. Included in this unit

A. Information sheet
B. Study guides
C. Audio-visual aids
   1. Charts
   2. Films, slides, filmstrips
   3. Materials from refrigeration companies
D. Test

II. References

Duncan, A. O., Food Processing. Turner E. Smith and Company, Atlanta, Georgia.

Macklin, Theodore. Making the Most of Agriculture. Ginn and Company, Atlanta, Georgia.

Frozen Foods Locker Construction Company, Memphis, Tennessee.

UNIT XVI

AGRICULTURAL COMMUNICATIONS

Refer to: WILDLIFE AND RECREATION - UNIT XI

UNIT XVII

ORIENTATION AND SCOPE OF FARM SERVICES

GOAL

Upon completion of this unit, which consists of approximately 5 hours of instruction, the student will have developed an understanding of the business principles and procedures necessary for entry into farm service careers.

PERFORMANCE OBJECTIVES

Upon completion of this unit, the student will be able to

I. Concerning the american free enterprise system

- A. Understand the basic principles of the american free enterprise system.
- B. Function in american business within the regulations and limitations imposed by government.
- C. Understand the use of labor, capital and management as factors of production.

II. In farm services in the community

- A. Identify common types of businesses.
- B. Identify common careers.
- C. Understand educational and experience requirements for each career.

SUGGESTED ACTIVITIES

I. The instructor will

- A. Discuss goals and objectives relative to career entry.
- B. Motivate through demonstration.
- C. Provide students with information sheets and study guides.
- D. Have a businessman talk to class.
- E. Demonstrate and discuss procedure outlined in information sheets and study guides.
- F. Evaluate and test.

II. The student will

- A. Review information sheets and study guides.
- B. Study goals and performance objectives.
- C. Take test.

INSTRUCTIONAL MATERIALS

I. Included in this unit

A. Information sheets
B. Study guides
C. Commercial literature
D. Test

II. References

Glos-Baker. Introduction to Business. Cincinnati: South-Western Publishing Company, 1963.

Hoover. Handbook of Agricultural Occupations. The Interstate Printers and Publishers, Inc., Danville, Illinois, 1963.

Jobs in Agriculture. Job family series 11, Science Research Association, Inc. 259 East Erie, Chicago 11, Illinois, 1960.

Wilson, Harmon and Elvin Eyster. Consumer Economic Problems. South-Western Publishing Company, Chicago, 1961.

UNIT XVIII

SALESMANSHIP

Refer to: FARM MACHINERY SALES AND SERVICE - UNIT XIII

UNIT XIX

JOB PROCUREMENT AND HUMAN RELATIONS

Refer to: FARM SUPPLIES AND EQUIPMENT - UNIT II

UNIT XX

ORGANIZATION AND MANAGEMENT OF BUSINESS AND LEGAL INFORMATION

Refer to: FARM SUPPLIES AND EQUIPMENT - UNIT XI

AGRICULTURAL SERVICE

Description: Agricultural Service occupations are those requiring technical and professional skills that can be offered at the high school level. A high school vocational agriculture student will be given opportunities to receive training for careers in Farm Mechanics, Agronomy, Animal and Plant Science, Forestry, Forage Crops and Farm Management.

The Agriculture Service family consists of the following units of instruction:

UNIT I

FARM MECHANICS

GOAL

After completion of this unit, the student will have discovered his farm mechanic aptitudes. He will have developed basic skills in farm mechanics, and will understand the underlying principles of farm mechanics processes. He will recognize quality work in farm mechanics and develop skills necessary for doing the specialized farm mechanic jobs that will prepare him for careers in agricultural service.

PERFORMANCE OBJECTIVES

Upon completion of this unit, the student will be able to

I. In tractor maintenance

- A. Identify and understand the function of the basic parts of tractors.
- B. Determine the extent of repair needed.
- C. Overhaul a tractor.
- D. Service tractors.

II. In welding

- A. Use safety precautions.
- B. Select and operate welding equipment.
- C. Do downhand, vertical and overhead welding.
- D. Read plans and fabricate equipment.
- E. Cut and fit properly with oxyacetylene equipment.
- F. Use inert gas welding equipment.

III. In farm surveying

A. Identify and give the function of all parts of the engineering instruments.
B. Handle and set up surveying instruments.
C. Operate the instruments to achieve accuracy with measurements.

IV. In electric motors

A. Select the correct type and size of electric motor.
B. Wire and install electric motor according to electrical code.
C. Use precautions in the operation and maintenance of electric motors.
D. Diagnose electric motor troubles and indicate the need for repairs.

V. In woodworking

A. Classify, select and care for lumber properly.
B. Read blueprints and make drawings effectively.
C. Figure bills of material.
D. Construct basic structures.

SUGGESTED ACTIVITIES

I. The instructor will

A. Discuss goal and objectives relative to career entry.
B. Motivate through demonstration.
C. Provide students with information sheets and study guides.
D. Use audio-visual aids.
E. Demonstrate and discuss information sheets and study guides.
F. Evaluate and test.

II. The student will

A. Review information sheet and study guides.
B. Demonstrate ability to accomplish skills.
C. Take test and be evaluated.

INSTRUCTIONAL MATERIALS

I. Instructional materials included in this unit

A. Information sheet
B. Study guides
C. Audio-visual aids
   1. Transparencies
   2. Slides
   3. Posters
D. Test

II. References

Phipps, McColly, Scranton, and Cook. Farm Mechanics Text and Handbook.

Henderson, M.H., and others. Farm Enterprises Mechanics. J. B. Lippincott Company, New York, 1948, pp. 159-161.

Jones, M.M., Shopwork on the Farm. McGraw-Hill Book Company, New York, 1955, pp. 118-125.

Roehl, Louis M. and A.D. Longhouse. Farmer's Shop Book. Milwaukee, Bruce Publishing Company, 1953, Chapter 9.

Wakeman, T. J. and Vernon Lee McCoy. The Farm Shop. pp. 166-189.

Ross, Henry and R.N. Craig. The Farm Shop. Austin, Steck Company, 1954.

Marford, V.J. Farm Arc Welding. Cleveland: The James F. Lincoln Arc Welding Foundation.

Procedure Handbook of Arc Welding Design and Practice. The Lincoln Electric Company.

O'Brien, Michael. Demonstrations for Farm Mechanics. Davis. Interstate Printers and Publishers.

Hamilton, Roland J. Using Electricity on the Farm. Englewood Cliffs, New Jersey, Prentice Hall Company, 1959.

Foster, Albert B. Approved Practices in Soil Conservation. Danville, Illinois. The Interstant Printers and Publishers, 1959.

Althouse, Andrew D., Carl Furnquist and William A. Bowditch. Modern Welding. Homewood, Illinois. The Goodheart-Wilcox Company.

UNIT II

AGRONOMY

GOAL

After completion of this unit, the student will have the ability to use and manage soils. He will understand the chemical and physical properties of soils. He will recognize the dangers of soil erosion and means of preventing soil erosion. The student will be able to classify land and judge soils. He will have a knowledge of agronomy which is necessary to a career in agriculture service.

PERFORMANCE OBJECTIVES

Upon completing this unit, the student will be able to do the following:

I. Concerning chemical and physical properties of soils

- A. Classify soils according to origin and size of particles.
- B. Determine properties of soils.
- C. Understand terms associated with chemical and physical properties of soil.
- D. Identify soil types and classes.

II. Concerning classifying and judging land

- A. Classify land according to capability.
- B. Sketch areas of land showing soil types, slopes and erosion.
- C. Judge soils.

III. Concerning soil erosion

- A. Identify kinds of erosion.
- B. Be able to help control the different kinds of erosion.
- C. Understand factors which influence erosion.

IV. Concerning the maintenance of soil fertility

- A. Correct soil pH.
- B. Maintain organic matter in soils.
- C. Conserve and use farm residues.
- D. Manage acid and alkaline soils.
- E. Use and manage green manure crops.
- F. Use commercial fertilizers.

V. Concerning drainage and conservation of soil water

- A. Plan and lay out drainage systems.
- B. Plan and lay out irrigation systems.

SUGGESTED ACTIVITIES

I. The instructor will

- A. Discuss goal and objectives relative to career entry.
- B. Motivate through demonstrations.
- C. Provide students with information sheets and study guides.
- D. Use audio-visual aids.
- E. Demonstrate and discuss information sheets and study guides.
- F. Evaluate and test.

II. The student will

A. Review information sheets and study guides.
B. Demonstrate ability to accomplish skills.
C. Take test and be evaluated.

INSTRUCTIONAL MATERIALS

I. Instructional materials included in this unit

A. Information sheet
B. Study guides
C. Audio-visual aids
   1. Transparencies
   2. Slides
   3. Posters

D. Test

II. References

Vanderford, H.B. Managing Southern Soils. John Wiley and Sons, Inc., New York, New York 1957.

Stallings, J.H. Soil Use and Management. Prentice Hall Inc., Englewood Cliffs, New Jersey, 1957.

Foster, A.B. Soil Conservation. Interstate Printers and Publishers, Danville, Illinois

UNIT III

ANIMAL HUSBANDRY

GOAL

Upon completion of this unit, the student will understand animal nutrition. He will know the principles of reproduction and the systems of breeding farm animals. The student will understand the various methods of controlling diseases and parasites. The student will be able to apply sound management decisions concerning the marketing of livestock and poultry products. He will have developed skills in animal husbandry which will help him in the agricultural services career.

PERFORMANCE OBJECTIVES

Upon completing this unit, the student will be able to

I. In animal nutrition

- A. Identify nutrients and feed ingredients.
- B. Know functions of feed nutrients.
- C. Balance rations.

II. Diseases and parasites

- A. Understand terms associated with animal diseases.
- B. Plan and carry out program of animal health for various classes of livestock.

III. In animal breeding

- A. Understand functions of the parts of the reproductive system.
- B. Plan and manage various types of breeding systems.
- C. Plan and manage artificial breeding programs.

IV. In the marketing of livestock

- A. Know and identify market classes and grades of livestock and livestock products.
- B. Plan a profitable system of marketing livestock and livestock products.

SUGGESTED ACTIVITIES

I. The instructor will

- A. Discuss goal and objectives relative to career entry.
- B. Motivate through demonstration.
- C. Provide students with information sheets and study guides.
- D. Use audio-visual aids.
- E. Demonstrate and discuss procedures outlined in information sheets and study guides.
- F. Evaluate and test.

II. The student will

- A. Review information sheets and study guides.
- B. Demonstrate ability to accomplish skills.
- C. Take test and be evaluated.

INSTRUCTIONAL MATERIALS

I. Instructional materials included in this unit

A. Information sheets
B. Study guides
C. Filmstrips
   1. "Combating Diseases and Parasites of Cattle"
   2. "Combating Diseases and Parasites of Swine"
   3. "Artificial Insemination of Dairy Cattle"
   4. "Vaccinating Methods Explained"
D. Charts
   1. Grades of eggs and poultry
   2. Wholesale cuts of meat
E. Slides
   1. "Signs of Heat in Cattle"
F. Test

II. References

Morrison, F.B. Feeds and Feeding. 22nd edition. Morrison Publishing Company, Ithica, New York.

Ensminger, M.E. Livestock Production. The Interstate Printers and Publishers, Danville, Illinois, 1960.

Winter, A.M. and Funk, E.M. Poultry Science and Practice. Lippincott, New York, 1960.

UNIT IV

ADVANCED PLANT HUSBANDRY

GOAL

After completion of this unit, the student will have acquired a working knowledge of plant nutrition and plant breeding. He will be able to recognize and control common insects and diseases in plants as well as carry out different methods of plant propagation. He will have developed the necessary skills and knowledge that will prepare him for careers in agricultural service.

PERFORMANCE OBJECTIVES

Upon completion of this unit, the student will be able to

I. In plant nutrition

A. Determine plant nutrient needs.
B. Diagnose and correct the nutritional deficiencies of plants.

C. Understand the life processes of plants in order to solve problems related to environmental and soil conditions.
D. Select, calibrate and maintain fertilizer equipment.

II. In plant breeding

A. Understand and use the Law of Heredity in applying modern methods of plant breeding.
B. Select the best varieties.

III. In recognizing and controlling plant pests

A. Recognize and control the common plant diseases.
B. Recognize and control the common insects.
C. Control weeds using modern methods.
D. Select chemicals that control plant pests but do not damage the environment.

IV. In methods of plant propagation

A. Produce plants from seeds.
B. Propagate plants from cuttings.
C. Reproduce plants from layerage.
D. Produce plants from budding and grafting.
E. Build and use propagation structures.

SUGGESTED ACTIVITIES

I. The instructor will

A. Discuss goal and objectives relative to career entry.
B. Motivate through demonstration.
C. Provide students with information sheets and study guides.
D. Use audio-visual aids.
E. Demonstrate and discuss information sheets and study guides.
F. Evaluate and test.

II. The student will

A. Review information sheets and study guides.
B. Demonstrate ability to accomplish skills.
C. Take test and be evaluated.

INSTRUCTIONAL MATERIALS

I. Instructional materials included in this unit

A. Information sheets
B. Study guides
C. Audio-visual aids
   1. Transparencies
   2. Slide - "How to Take a Soil Sample" NASCO
D. Test

II. References

"How Soil pH Affects Availability of Plant Nutrients," National Plant Food Nutrients, Washington, D.C.

"How to Take a Soil Sample." (Colored slides) NASCO Supply Company.

American Society of Agronomy and National Plant Food Institute. Hunger Signs in Crops. Second edition. Washington, D.C. National Fertilizer Association, 1949.

Gustafson, A. F., Using and Managing Soils. McGraw-Hill Book Company

McVickar, Malcolm H. Using Commercial Fertilizers. The Interstate Printers and Publishers, Danville, Illinois, 1961

Mahlstede, John P. and Ernest S. Haber. Plant Propagation. New York: John and Sons, Inc., 1962

Wells, James S. Plant Propagation Practices. New York: The Macmillan Company, 1964.

UNIT V

FORAGE CROPS

GOAL

After completion of this unit, the student will have the ability to identify the common forages. He will be able to produce quality hay and silage. He will have the knowledge for good pasture management procedures which is necessary for careers in agriculture service.

PERFORMANCE OBJECTIVES

Upon completion of this unit, the student will be able to

I. In identifying the common forages

- A. Identify common forages.
- B. Classify common forages.
- C. Make use of the common forages.

II. In the production of quality hay and silage

- A. Classify hay and silage according to quality.
- B. Harvest forage crops at the proper time to insure a product of highest nutritive value.
- C. Test for moisture content of hay and silage.
- D. Select, adjust and maintain hay and silage equipment.

III. In pasture management

A. Establish a pasture.
B. Manage a pasture.
C. Select and maintain equipment used in pasture work.

SUGGESTED ACTIVITIES

I. The instructor will

A. Discuss goal and objectives relative to career entry.
B. Motivate through demonstration.
C. Provide students with information sheets and study guides.
D. Show slides of pasture tours.
E. Conduct a local pasture tour.
F. Demonstrate and discuss procedures outlined in information sheets and study guides.
G. Evaluate and test.

II. The student will

A. Review information sheets and study guides.
B. Demonstrate ability to accomplish skills.
C. View slides of pasture tours.
D. Attend local pasture tour.
E. Take test and be evaluated.

INSTRUCTIONAL MATERIALS

I. Instructional materials included in this unit

A. Information sheet
B. Study guides
C. Audio-visual aids
   1. Transparencies
   2. Slides
      a. "Grassland Farming" NASCO
      b. "Plants Poisonous to Livestock" NASCO
      c. "Common Pasture and Meadow Weeds and Their Control" NASCO
   3. Posters
   4. Samples
D. Test

II. References

Lancaster, Robert R., Edwin James, Richmond Y. Bailey, and Roland Russell Harris. Pastures. Turner E. Smith and Company, Atlanta, Georgia, 1957.

Serviss, George H. and Gilbert H. Ahlgren. Grassland Farming. John Wiley and Sons, New York, 1955.

King, George H. Pastures for the South. The Interstate Printers and Publishers, Danville, Illinois, 1963.

Ensminger, M.E. Beef Cattle Science. The Interstate Printers and Publishers, Danville, Illinois, 1960.

Gustafson, A.F. Using and Managing Soils. McGraw-Hill Book Company, New York and London, 1948.

UNIT VI

FORESTRY MANAGEMENT

GOAL

After completion of this unit, the students will be able to utilize the methods of marketing and harvesting timber products, and will be familiar with the local and state marketing outlets available to him.

PERFORMANCE OBJECTIVES

Upon completion of this unit, the student will be able to

I. In harvesting the timber crop

- A. Identify and classify marketable products.
- B. Estimate standing timber.

II. In marketing the timber crop

- A. Use various methods of harvesting timber products.
  1. Lump sales
  2. Partial payment
  3. Price per thousand
  4. Percent basis
- B. Make and evaluate sale contracts.
- C. Demonstrate the ability to:
  1. Make a timber sale.
  2. Market forest products by weight and scale.
- D. Inform buyers on the availability of forest products.

SUGGESTED ACTIVITIES

I. The instructor will

- A. Discuss goal and objectives relative to career entry.
- B. Show samples of timber to show quality of timber.
- C. Show samples of contracts for harvesting and marketing.

D. Show different products made from the forest.
E. Show map indicating location of local and state marketing outlets.
F. Demonstrate and discuss information sheets and study guides.
G. Conduct a tour of a forest plot.
H. Evaluate and test.

II. The student will

A. Review information sheet and study guides.
B. Demonstrate proficiency in marketing and harvesting timber products.
C. Take test and be evaluated.

INSTRUCTIONAL MATERIALS

I. Instructional materials included in this unit

A. Information sheet
B. Study guides
C. Teaching aids
   1. Films and filmstrips
   2. Charts
   3. Resource personnel
   4. Maps
   5. Slides
D. Test

II. References

Mobley, M.D. and R. N. Haskins. Forestry in the South. Turner and Smith, 1956.

Virginia Polytechnic Institute Bulletin 282, What is the Value of My Standing Timber. September, 1962.

Louisiana Experiment Station Bulletin, Timber Marketing Handbook for North Louisiana.

Louisiana Agriculture Extension Publication 1145, 4-H Club Forestry, March 1958.

Forest Farmer Manual Edition. March, 1963, Forest Farmers Association 1100 Crescent Avenue, Atlanta, Georgia.

Louisiana Timber Products—Quarterly Market Survey. Latest issue may be obtained from Louisiana Department of Agriculture and Immigration, Box 4184, Capitol Station, Baton Rouge, Louisiana 70804.

UNIT VII

FARM MANAGEMENT

GOAL

After completion of this unit, the student will be able to select a farm, market farm products advantageously, make managerial decisions, analyze problems of financing and be able to keep and interpret farm records and accounts.

PERFORMANCE OBJECTIVES

Upon completion of this unit, the student will be able to

I. In selecting a farm to achieve goals

- A. Appraise a farm.
- B. Evaluate the topography of the soil to determine land use.

II. In financing the farm business

- A. Locate the sources of credit available.
- B. Use the different credit instruments.
- C. Make satisfactory managerial decisions.

III. In marketing farm products

- A. Study and recognize seasonal marketing trends.
- B. Sell farm products.
- C. Use governmental agencies in marketing farm products.

IV. In farm organizations

- A. Become associated with local farm organizations and cooperatives.

V. In legal problems

- A. Have basic knowledge of law pertaining to his farm operation.
- B. Have knowledge of law terminology.

VI. In farm records and accounts

- A. Figure production and marketing cost.
- B. Keep farm records and accounts.

SUGGESTED ACTIVITIES

I. The instructor will

- A. Provide students with information sheets and study guides.
- B. Conduct a tour of a marketing outlet and a farm.

C. Supply students with appraisal forms.
D. Demonstrate and discuss procedures outlined in information sheets.
E. Evaluate and test.

II. The student will

A. Write local and state governmental agencies requesting marketing information.
B. Study and analyze records and deeds.
C. Demonstrate ability to accomplish skills.
D. Take test and be evaluated.

INSTRUCTIONAL MATERIALS

I. Instructional materials included in this unit

A. Information sheet
B. Appraisal forms
C. Study guide
D. Test

II. References

Kind, Frank P. and L. S. Hardin. Better Farm Management. Turner E. Smith and Company, Atlanta, Georgia, 1961.

Hopkins, John A. and William G. Murray. Elements of Farm Management. Prentice-Hall Inc., Englewood Cliffs, New Jersey.

Shilt, Bernard and W. Harmon Wilson. Business Principles and Management. South-Western Publishing Company, Cincinnati, Ohio, 1961.

Fisk, McKee and James C. Snapp. Applied Business Law. South-Western Publishing Company, Cincinnati, Ohio, 1960.