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Washington

Following a two-page summary of a project conducted to develop course outlines for the approved vocational agriculture courses taught in the State of Washington high schools, this document presents course outlines and lists of recommended instructional materials for the following courses: Production Agriculture (including Agriculture I--Introduction to Agriculture, Agriculture II--Crop Production and Introduction to Soil Science, Agriculture III, and Agriculture IV); Horse Husbandry; Agriculture Mechanics (Beginning, II, III, Agricultural Building Construction, and Advanced); Ornamental Horticulture (Beginning and Advanced); Forestry I; and Logging Forestry Practices. A typical course outline consists of the title of the course, unit titles, topics to be covered under each unit, and days allotted for each topic. (LMS)

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COURSE OUTLINES IN
VOCATIONAL AGRICULTURE

The project reported herein was performed pursuant to a grant from the Research Coordinating Unit of the Washington State Commission for Vocational Education. Contractor undertaking such projects under the Commission for Vocational Education sponsorship are encouraged to express freely their professional judgment in the conduct of the project. Points of view or opinions stated do not, therefore, necessarily represent official Commission for Vocational Education position or policy.

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# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Summary of Report</td>
<td>1</td>
</tr>
<tr>
<td>Body of Report</td>
<td>1</td>
</tr>
<tr>
<td>Production Agriculture</td>
<td>4</td>
</tr>
<tr>
<td>Agriculture I - Introduction to Agriculture</td>
<td>5</td>
</tr>
<tr>
<td>Agriculture II - Crop Production and Introduction to Soil Science</td>
<td>7</td>
</tr>
<tr>
<td>Agriculture III</td>
<td>9</td>
</tr>
<tr>
<td>Agriculture IV</td>
<td>11</td>
</tr>
<tr>
<td>Production Agriculture - Texts &amp; References</td>
<td>13</td>
</tr>
<tr>
<td>Production Agriculture - Visuals</td>
<td>14</td>
</tr>
<tr>
<td>Horse Husbandry</td>
<td>15</td>
</tr>
<tr>
<td>Horse Husbandry - Texts, References and Visuals</td>
<td>16</td>
</tr>
<tr>
<td>Agriculture Mechanics</td>
<td>17</td>
</tr>
<tr>
<td>Beginning Agriculture Mechanics</td>
<td>18</td>
</tr>
<tr>
<td>Agriculture Mechanics II</td>
<td>20</td>
</tr>
<tr>
<td>Agriculture Mechanics III</td>
<td>21</td>
</tr>
<tr>
<td>Agriculture Mechanics - Agricultural Building Construction</td>
<td>22</td>
</tr>
<tr>
<td>Agriculture Mechanics - Advanced</td>
<td>23</td>
</tr>
<tr>
<td>Ornamental Horticulture</td>
<td>24</td>
</tr>
<tr>
<td>Beginning Ornamental Horticulture</td>
<td>25</td>
</tr>
<tr>
<td>Advanced Ornamental Horticulture</td>
<td>27</td>
</tr>
<tr>
<td>Ornamental Horticulture - Texts &amp; References</td>
<td>29</td>
</tr>
<tr>
<td>Forestry I</td>
<td>30</td>
</tr>
<tr>
<td>Forestry I - Texts, References and Visuals</td>
<td>33</td>
</tr>
<tr>
<td>Logging Forestry Practices</td>
<td>34</td>
</tr>
<tr>
<td>Logging &amp; Forestry Practices - Texts, References &amp; Visuals</td>
<td>43</td>
</tr>
</tbody>
</table>
SUMMARY OF REPORT

A. The time period covered by this report was from April 15, 1976, to September 30, 1976.

B. The goals and objectives of this project was to develop course outlines for each approved vocational agriculture class which is taught in the State of Washington.

C. Procedures followed:
   1. Design survey form and mail to each vocational agriculture teacher in Washington.  See Appendix A
   2. Consolidate returned survey forms.
   3. Invite a committee of 17 vocational agriculture teachers to review consolidated survey returns and develop recommended course outlines for each vocational class.

D. Results:
   1. Received survey forms back from 59 of the 156 high schools with vocational agriculture programs, covering 25 different classes. These returned forms were tabulated and recorded by class. A committee of 16 vocational agriculture teachers met on August 24 - 25, 1976, reviewed the tabulated course outlines and prepared course outlines which will serve as recommended course outlines for approved vocational agriculture classes in the State of Washington.  See Appendix B

BODY OF REPORT

A. A serious problem existed in the State of Washington as there had been no recently developed course outlines for any of the vocationally approved classes in agriculture. The Agriculture Education Section in the Office of the Superintendent of Public Instruction consistently receives requests from vocational agriculture teachers and vocational administrators for such outlines when they are revising and updating existing classes and when they are developing new classes. Without course outlines, providing teachers and vocational administrators with consultive service was cumbersome and difficult.

B. The goals and objectives of the project were to develop course outlines for each approved vocational agriculture class which is taught in the State of Washington.

C. This project was designed to develop course outlines for
each vocationally approved agriculture class that is offered in the high schools of the State of Washington. The student population enrolled in vocational agriculture classes includes both male and female, ages 14 through 19, grades 9 through 12 and includes many disadvantaged students. The instructional staff consists of 236 men and women teachers who are all vocationally certificated. Approximately 200 of these have graduated with degrees in Agriculture Education from accredited universities and the remainder have been certificated to teach agriculture specialty classes and met certification requirements through occupational experience in the specific agriculture area being taught. A survey instrument was developed and sent to each certificated vocational agriculture teacher in the state to be completed and returned on each vocationally approved class being taught. A secretary tabulated and consolidated the return survey forms by class code. Upon completion of the tabulation process, a committee of 16 vocational agriculture teachers met to review the consolidated course outlines and write course outlines for each approved vocational agriculture class. This group of teachers also compiled a list of text books, reference materials and visual aids which would be appropriate for each subject matter area. The course outlines and resource materials listed have been typed and are now available for use by vocational agriculture teachers and vocational administrators. See Appendix B

D. Completed survey forms were received from 59 of the 156 high schools offering vocational agriculture programs covering 25 different classes. These returned forms were tabulated and recorded by class. A committee of 16 vocational agriculture teachers met on August 24 - 25, 1976, in Ellensburg, reviewed the tabulated course outlines and prepared course outlines which will serve as recommended course outlines for approved vocational agriculture classes in the State of Washington. Three of the teachers worked on horticulture classes, three on forestry classes, four on agriculture mechanics classes and six on production agriculture classes. These teachers also compiled a list of text books, reference material and visual aids which would be appropriate for each subject matter area. See appendix B

E. Conclusions, implications and recommendations. Course outlines have been developed for nearly all of the vocationally approved agriculture classes taught in the high schools in the State of Washington. These will be provided to teacher and vocational administrators who are planning new classes or programs or are updating their present programs.
At the present time, work is progressing on a project to develop curriculum guides for the various vocational agriculture classes. The intent is to "marry" these with the course outlines developed under this project, then it is recommended that the course outlines and curriculum guides be studied by appropriate committees from the agriculture industry to insure that the end product meets the needs of both employers and employees in the industry. The end product should greatly improve the instructional program in all vocational agriculture classes.
APPENDIX A

SURVEY FORM

VOCATIONAL AGRICULTURE CLASS OUTLINE
Survey Form
Vocational Agriculture Class Outline

Due Date: March 1, 1976

School __________________________________________

Instructor _______________________________________

Course Title: ____________________________________

Length of course: Full year ___ Semester ___ Trimester ___ Quarter ___ Other ___

If other, how many days? __________________________

Length of Class Period: 45 min. ___ 50 min. ___ 55 min. ___ 60 min. ___

65 min. ___ 70 min. ___ 2 hr. ___ Other ___

If other, how long? ________________________________

Grade Level: ________________________________

Major References: (List only those you consider outstanding.)

1. ____________________________________________

2. ____________________________________________

3. ____________________________________________

Enterprise & Units (Major areas of instruction) Days Hours **

If the class is for more than one term, please indicate the number of hours.
The production agriculture committee consolidated all phases of production agriculture into four one year courses (Ag. I, II, III and IV.) with the following recommendations and considerations:

1. That a complete vocational agriculture program consist of four years of instruction.

2. That, if at all possible, the curriculum should include approximately 50% agriculture mechanics. The teacher, with the assistance of the local advisory committee, should determine which portions of the production agriculture course outline should be deleted or de-emphasized and which portion of the agriculture mechanics course outline should be included so that the vocational agriculture curriculum will best meet the needs of the community and also fit the facilities available.

3. Where schools are on the semester or trimester systems specialized units of instruction may be readily taken from the one year Ag I, II, III or IV course outlines to develop semester or trimester units. Examples would be:

   A. Animal Science
   B. Crop Production
   C. Soils and Fertilizers
   D. Agribusiness
   E. Farm Management
   F. Animal Nutrition
   G. Advanced Animal Science
   H. Tree Fruit Production
UNIT I. Orientation - Future Farmers of America

A. Brief History
B. National
C. State
D. Local
E. Aims and Purposes
F. Organization
G. Constitution, Creed

UNIT II. Orientation - Agriculture Industry

A. Production and Agribusiness
B. Careers in Production Agriculture

UNIT III. Supervised Occupational Experience Programs

A. Explanations of Types of Programs

UNIT IV. Record Bookkeeping

A. Purpose and Need 1
B. Practice Record Book 8
C. Open Individual Record Books 3

UNIT V. Animal Science

A. Swine Unit
1. Breed Identification 4
2. Industry 2
3. Breed Characteristics 3
4. Selection of Animals (Parts and Judging) 7
5. Management 2
6. Buildings & Equipment 2
7. Diseases & Parasites 3
8. Marketing 2

B. Beef Unit 25
1 - 8 same as above

C. Sheep Unit 25
1 - 8 same as above

D. Dairy Unit 25
1 - 8 same as above

E. Poultry Unit 25
1 - 8 same as above
UNIT VI. Parliamentary Law

A. Purpose 1
B. Types of Motions 7
C. Demonstrate Motions 6
   1. Simulate Washington Contest
      a. Use of Practice Topics

UNIT VII. Public Speaking 11

A. Preparation 3
B. Delivery 8
C. Questions 10

Testing and Quizzes 10
Meeting and Assemblies 6
Field Trips 4
### UNIT I.
**FFA And Related Activities**

| Days | 20 |

| A. Public Speaking |
| B. Parliamentary Procedure |
| C. Chapter Farmer Requirements |
| D. Project Work |

### UNIT II.
**Orientation to Crop Production**

| Days | 5 |

| A. Where Crops are Grown |
| 1. Worldwide |
| 2. Nationwide |
| 3. Statewide |
| 4. Locally |

### UNIT III.
**Plant Growth and Reproduction**

| Days | 10 |

| A. Functions of leaves, roots, stems etc. | 4 |
| B. Plant Classification | 2 |
| C. Methods of Reproduction | 4 |

### UNIT IV.
**Plant Identification**

| Days | 20 |

| A. Crop |
| 1. Cereal |
| 2. Vegetable |
| 3. Seed |
| B. Weed |
| 1. Seed |
| 2. Noxious |

### UNIT V.
**Plant Pest and Their Control**

| Days | 15 |

| A. Weeds | 4 |
| B. Insects | 4 |
| C. Plant Diseases | 4 |
| D. Chemical Safety | 3 |

### UNIT VI.
**Study of Specific Crops of Importance**

| Days | 90 |

| A. National - Cereal Grains, Forages, Vegetables |
| B. State - Cereal Grain, Forages, Vegetables, Orchard Crops, Specialty Crops |
UNIT VI. Study of Specific Crops of Importance (cont.)

C. Local - Dependent Upon Need
D. Cover History, Use, Propagation, Harvesting Marketing
E. Economics of Each Crop Produced Locally

UNIT VII. Soils - Introduction

A. Soil Formation 3
B. pH 1
C. Fertility 2
D. Land Judging 5

Days left for school assemblies and other School Business 9
<table>
<thead>
<tr>
<th>UNIT I.</th>
<th>FFA and Related Activities</th>
<th>DAYS</th>
</tr>
</thead>
<tbody>
<tr>
<td>A.</td>
<td>Record Books</td>
<td></td>
</tr>
<tr>
<td>B.</td>
<td>Parliamentary Law</td>
<td></td>
</tr>
<tr>
<td>C.</td>
<td>Public Speaking</td>
<td></td>
</tr>
<tr>
<td>D.</td>
<td>Stock Show - Fair</td>
<td></td>
</tr>
<tr>
<td>E.</td>
<td>Chapter Project</td>
<td></td>
</tr>
</tbody>
</table>

| UNIT II.  | Parliamentary Law and Public Speaking | 10   |

<table>
<thead>
<tr>
<th>UNIT III.</th>
<th>Livestock Management Skills</th>
<th>20</th>
</tr>
</thead>
<tbody>
<tr>
<td>A.</td>
<td>Castration</td>
<td></td>
</tr>
<tr>
<td>B.</td>
<td>Dehorning</td>
<td></td>
</tr>
<tr>
<td>C.</td>
<td>Branding</td>
<td></td>
</tr>
<tr>
<td>D.</td>
<td>Artificial Insemination</td>
<td></td>
</tr>
<tr>
<td>E.</td>
<td>Hoof Trimming</td>
<td></td>
</tr>
<tr>
<td>F.</td>
<td>Hoof Fitting</td>
<td></td>
</tr>
<tr>
<td>G.</td>
<td>Vaccination</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>UNIT IV.</th>
<th>Genetic and Breeding</th>
<th>15</th>
</tr>
</thead>
<tbody>
<tr>
<td>A.</td>
<td>Dominance</td>
<td></td>
</tr>
<tr>
<td>B.</td>
<td>Quantitative Genetics</td>
<td></td>
</tr>
<tr>
<td>C.</td>
<td>Artificial Insemination</td>
<td></td>
</tr>
<tr>
<td>D.</td>
<td>In-Breeding</td>
<td></td>
</tr>
<tr>
<td>E.</td>
<td>Line Breeding</td>
<td></td>
</tr>
<tr>
<td>F.</td>
<td>Hybrids</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>UNIT V.</th>
<th>Feeds and Feeding</th>
<th>30</th>
</tr>
</thead>
<tbody>
<tr>
<td>A.</td>
<td>Nutrients - Their Function and Source</td>
<td>10</td>
</tr>
<tr>
<td>B.</td>
<td>Physiology of Animals</td>
<td>5</td>
</tr>
<tr>
<td>C.</td>
<td>Types of Feed</td>
<td>5</td>
</tr>
<tr>
<td>D.</td>
<td>Feed Additives</td>
<td>2</td>
</tr>
<tr>
<td>E.</td>
<td>Ration Balancing</td>
<td>8</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>UNIT VI.</th>
<th>Soils</th>
<th>25</th>
</tr>
</thead>
<tbody>
<tr>
<td>A.</td>
<td>Structure</td>
<td>2</td>
</tr>
<tr>
<td>B.</td>
<td>Texture</td>
<td>2</td>
</tr>
<tr>
<td>C.</td>
<td>Organic Matter</td>
<td>6</td>
</tr>
<tr>
<td>D.</td>
<td>Water Movement</td>
<td>5</td>
</tr>
<tr>
<td>E.</td>
<td>Alkalinity</td>
<td>2</td>
</tr>
<tr>
<td>F.</td>
<td>Acidity</td>
<td>2</td>
</tr>
<tr>
<td>G.</td>
<td>Fertility</td>
<td>6</td>
</tr>
</tbody>
</table>

-9-
UNIT VII. Agribusiness
A. Types
B. Job Opportunities
C. Skills Required

UNIT VIII. Business Organization
A. Types
   1. Cooperatives
   2. Partnerships
   3. Corporations
   4. Individual Proprietorships
B. History
C. Organization
D. Advantages
E. Disadvantages
F. Management

UNIT IX. Surveying and Map Reading
A. Transit
B. Compass
C. Legal Descriptions
D. Land Measurement

UNIT X. School Activities
AGRICULTURE IV

UNIT I. FFA and Related Activities
A. Record Books  
B. Parliamentary Procedure  
C. Public Speaking  
D. Chapter Projects  

UNIT II. Farm Management
A. Purposes  
B. Budgets  
C. Rentals and Leases  
D. Purchasing  
E. Machinery Investments  
F. Marketing  
G. Farm Management Games  
H. Government Programs  
I. Financing  
J. IRS  

UNIT III. Agriculture Careers
A. Job Opportunities  
B. Public Sector  
C. Private Sector  
D. Local Guest Speakers  

UNIT IV. Agriculture Chemicals
A. Fertilizers and Pesticides
   1. Use and Application  
   B. Formulations and Mode of Action  

UNIT V. Livestock Management Skills
A. Field Trips  
B. Practical  
C. Butchering  
D. Castration  
E. Docking  
F. Sheep Shearing  
G. Shots  

UNIT VI. Farmstead Planning and Beautification
A. Lawns, Ornamental and Layout
## UNIT VII. Agriculture Engineering

<table>
<thead>
<tr>
<th>Topic</th>
<th>Days</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Irrigation Systems</td>
<td>8</td>
</tr>
<tr>
<td>B. Fencing</td>
<td>2</td>
</tr>
<tr>
<td>C. Farm Machinery</td>
<td>5</td>
</tr>
<tr>
<td>D. Electrification</td>
<td>5</td>
</tr>
</tbody>
</table>

## UNIT VIII. Horticulture

<table>
<thead>
<tr>
<th>Topic</th>
<th>Days</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Importance</td>
<td>8</td>
</tr>
<tr>
<td>B. Propagation</td>
<td>2</td>
</tr>
<tr>
<td>C. Care</td>
<td>5</td>
</tr>
<tr>
<td>D. Marketing</td>
<td>5</td>
</tr>
<tr>
<td>E. Areas of Production</td>
<td>5</td>
</tr>
<tr>
<td>F. Tree Fruits</td>
<td>5</td>
</tr>
<tr>
<td>G. Small Fruits</td>
<td>5</td>
</tr>
</tbody>
</table>

## UNIT IX. Wildlife Management

<table>
<thead>
<tr>
<th>Topic</th>
<th>Days</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Competition Between Domestic and Wild Animals</td>
<td>8</td>
</tr>
<tr>
<td>B. Balance of Nature</td>
<td>2</td>
</tr>
<tr>
<td>C. Fisheries</td>
<td>5</td>
</tr>
<tr>
<td>D. Checkdam for Waterfall</td>
<td>5</td>
</tr>
</tbody>
</table>

## UNIT X. Miscellaneous School Activities

<table>
<thead>
<tr>
<th>Topic</th>
<th>Days</th>
</tr>
</thead>
<tbody>
<tr>
<td>Miscellaneous School Activities</td>
<td>10</td>
</tr>
</tbody>
</table>
Production Agriculture - Texts and References

Bundy and Diggins, Livestock and Poultry Production, Prentice Hall
F.P.A. Manual, FFA Supply Center
Record Book, Interstate Publishers
Knuti, Korpi and Hide, Profitable Soil Management, Prentice Hall
Donahue, Soils and Their Management, Interstate Publishers
Evans and Donahue, Exploring Agriculture, Prentice Hall
Richter & Wilson, Producing Farm Crops, Interstate Publishers
Delorit and Ahlgren, Crop Production, Prentice Hall
Approved Practices in Pasture Management
Léonard & Martin, Principles of Field Crop Production, Macmillan Co.
Morrison, Feeds and Feeding, National Farm Book Co.
Heath, Metcalf & Barnes, Forages, National Farm Book Co.
Doane, Farm Management Guide, Doane's Agriculture Service
Surveying Unit, Curriculum Management Center
Jackson, Parliamentary Law
Hall, Dynamics of Group Discussion, Interstate Publishers
FFA Advisor's Guide, FFA Supply Center
Ensminger, Animal Science, Interstate Publishers
Ensminger, Stockman's Handbook, Interstate Publishers
Ensminger, Beef Cattle Science, Interstate Publishers
Juergenson, Approved Practices in Sheep Production, Interstate Publishers
Juergenson, Approved Practices in Swine Production, Interstate Publishers
Extension Bulletin PNW 51, Cooperative Extension Service
Stamm and Burch, Veterinary Medicine for Farmers, National Farm Book Co.
Thrust '75 Material, FFA Supply Center
Beef Cattle Body Types, Cal. Poly.
Weeds and Their Control, Iowa State
Weeds of Eastern Washington, Cooperative Extension Service
Pamphlets, Home Gardens, Home Lawns, Tansy Ragwort, Grafting Fruit Trees, and Pruning the Home Orchard, Cooperative Extension Service
Using Arithmetic in Agriculture, U. of Illinois
Trees of Washington, W.S.U. Bulletin
Pesticide Handbook, W.S.U. Dept. of Agriculture
FFA Thrust Information
Soil Science
Robert's Rules of Order, Interstate Publisher
Tax Unit, IRS
Crop Bulletins, U.S.D.A. and W.S.U., Cooperative Extension Service
Phipps, Farm Mechanics
Ensminger, Horses and Horsemanship, Interstate Publishers
Juergenson, Handbook of Livestock Equipment, Interstate Publishers
Fertilizer Handbook, Fertilizer Institute

Note: For additional texts and references refer to publication, Text and Reference Books for Use in Washington Agriculture Education Programs, 1972, available from the Agriculture Education Department at W.S.U.
Production Agriculture - Visuals

Living Soil
The SCS District
Careers in Agriculture, Cal. Poly Series
Fruits of a Lifetime
No Room for Weeds
Fresh From the West
Fresh Country Apples
Shop Safety
Some Call it Luck
Farm Credit Films, Farm Credit Administration, Spokane, Wa.
Slide Set, Selection of Pork, University of Illinois
Slide Set, Selection of Beef, University of Illinois
Ag. Chemical Safety, Cal. Poly
U.S. Steel Films, Growing Beets, Etc
John Deere Overheads, Slides
Miracle of Plant Growth
HORSE HUSBANDRY

This unit is set up for a trimester program and could easily be expanded to a full semester or a full year by in-depth study.

| UNIT I. | FFA and Supervised Project | 4 |
| UNIT II. | Careers in Horse Industry | 1 |
| UNIT III. | History of the Horse Industry | 2 |
| UNIT IV. | History and Development of the Horse | 4 |
| UNIT V. | Anatomy and Action of the Horse | 5 |
| UNIT VI. | Selection and Judging | 5 |
| UNIT VII. | Unsoundness and Stable Vices | 5 |
| UNIT VIII. | Types, Classes and Breeds | 5 |
| UNIT IX. | Genetics | 2 |
| UNIT X. | Breeding and Reproduction | 3 |
| UNIT XI. | Nutrition | 5 |
| UNIT XII. | Building, Equipment | 3 |
| UNIT XIII. | Tools | 1 |
| UNIT XIV. | Health | 5 |
| UNIT XV. | Horsemanship | 6 |
| UNIT XVI. | Management and Business | 3 |
| UNIT XVII. | Equitation and Training | 10 |
| UNIT XVIII. | Horse Show Production | 5 |
Horse Husbandry - Texts, References and Visuals

Ensminger, Horses and Horsemanship, Interstate Publishers
Cooperative Extension Service Bulletins, Cooperative Extension Service
The Western Horse, Interstate Publishers
Western Horseman, Magazine, Breed Association
Horse, Magazine, Breed Association
The Horse in North America, Washington State University
Four Footed Industry, Washington State University
Appaloosa, University of Idaho
Fundamentals of Stock Seat Equitation, University of Idaho
Jumping and Cross Country Riding, University of Idaho
Horse F.S. Series, Vocational Education, Cal. Poly
Horse Slide Series, Arabian Association
American Quarter Horse Films, American Quarter Horse Association
AGRICULTURAL MECHANICS

Review Committee

Rick Adams    Prosser
James R. McKay Walla Walla
David Odenrider Fife
Michael Saunders Battleground

## BEGINNING AGRICULTURAL MECHANICS - FULL YEAR

<table>
<thead>
<tr>
<th>UNIT</th>
<th>Topic</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>Agricultural Mechanics - Career Orientation</td>
<td>1</td>
</tr>
<tr>
<td>II</td>
<td>FFA and Supervised Farming Program</td>
<td>3</td>
</tr>
<tr>
<td>III</td>
<td>Record Keeping</td>
<td>2</td>
</tr>
<tr>
<td>IV</td>
<td>Shop Safety - Safety Test</td>
<td>4</td>
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<tr>
<td>V</td>
<td>Tool Identification</td>
<td>3</td>
</tr>
<tr>
<td>VI</td>
<td>Grinders</td>
<td>2</td>
</tr>
<tr>
<td>VII</td>
<td>Tool Sharpening</td>
<td>6</td>
</tr>
<tr>
<td>VIII</td>
<td>Drill Bit Sharpening</td>
<td>6</td>
</tr>
<tr>
<td>IX</td>
<td>Tap and Die</td>
<td>6</td>
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<tr>
<td>X</td>
<td>Power Tool Usage (Tools to be used during the year)</td>
<td>8</td>
</tr>
<tr>
<td>XI</td>
<td>Hardware and Fasteners</td>
<td>2</td>
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<tr>
<td>XII</td>
<td>Arc Welding</td>
<td>22</td>
</tr>
<tr>
<td>XIII</td>
<td>Oxy-acetylene Welding and Cutting</td>
<td>22</td>
</tr>
<tr>
<td>XIV</td>
<td>Forge Work</td>
<td>8</td>
</tr>
<tr>
<td>XV</td>
<td>Cold Work</td>
<td>6</td>
</tr>
<tr>
<td>XVI</td>
<td>Bending and Forming</td>
<td>4</td>
</tr>
<tr>
<td>XVII</td>
<td>Soldering and Sheet Metal</td>
<td>4</td>
</tr>
<tr>
<td>XVIII</td>
<td>Pipe work and General Plumbing</td>
<td>4</td>
</tr>
<tr>
<td>XIX</td>
<td>Basic Electricity</td>
<td>6</td>
</tr>
<tr>
<td>XX</td>
<td>Basic Concrete and Masonry Construction</td>
<td>3</td>
</tr>
<tr>
<td>XXI</td>
<td>Rope Work</td>
<td>3</td>
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<tr>
<td>XXII</td>
<td>Basic Carpentry (Rafter Cutting)</td>
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<td>XXIII</td>
<td>Painting and Glazing</td>
<td>3</td>
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</table>
UNIT XXIV.  Tractor Operation, Maintenance and Safety  4
UNIT XXV.  Project Planning and Design Layout  3
UNIT XXVI.  Individual Projects  27

Operation and Safety of Equipment and tools included in all units.
<table>
<thead>
<tr>
<th>UNIT</th>
<th>Topic</th>
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<tbody>
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<td>I</td>
<td>FFA</td>
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<td>II</td>
<td>Shop Safety</td>
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<td>III</td>
<td>Arc Welding</td>
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</tr>
<tr>
<td>IV</td>
<td>Oxy-acetylene Welding</td>
<td>45</td>
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<td>V</td>
<td>Heli-Arc Welding</td>
<td>20</td>
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<td>VI</td>
<td>Mig Welding</td>
<td>20</td>
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<tr>
<td>VII</td>
<td>Sheet Metal and Soldering</td>
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<td>Individual Projects</td>
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<td>4</td>
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<td>Supervised Occupational Experience</td>
<td>4</td>
</tr>
<tr>
<td>III</td>
<td>Record Keeping</td>
<td>1</td>
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<tr>
<td>IV</td>
<td>Introduction, Safety, Tools and Use</td>
<td>4</td>
</tr>
<tr>
<td>V</td>
<td>4 Stroke Cycle, Names of Parts, Theory</td>
<td>7</td>
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<tr>
<td>VI</td>
<td>Batteries and Service</td>
<td>3</td>
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<tr>
<td>VII</td>
<td>Ignition System and Wiring</td>
<td>7</td>
</tr>
<tr>
<td>VIII</td>
<td>Trouble Shooting</td>
<td>6</td>
</tr>
<tr>
<td>IX</td>
<td>Valves and Service</td>
<td>4</td>
</tr>
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<td>X</td>
<td>Piston and Rings</td>
<td>4</td>
</tr>
<tr>
<td>XI</td>
<td>Rods and Bearings</td>
<td>2</td>
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<td>XII</td>
<td>Carburetors, Exhaust Systems</td>
<td>4</td>
</tr>
<tr>
<td>XIII</td>
<td>Individual Projects</td>
<td>13</td>
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<tr>
<td>XIV</td>
<td>2-Cycle Engines</td>
<td>1</td>
</tr>
<tr>
<td>XV</td>
<td>Suspension</td>
<td>2</td>
</tr>
<tr>
<td>XVI</td>
<td>Steering</td>
<td>2</td>
</tr>
<tr>
<td>XVII</td>
<td>Routine Care and Maintenance</td>
<td>3</td>
</tr>
<tr>
<td>XVIII</td>
<td>HP and Buying Considerations</td>
<td>1</td>
</tr>
<tr>
<td>XIX</td>
<td>Cooling</td>
<td>2</td>
</tr>
<tr>
<td>XX</td>
<td>Lubrication</td>
<td>2</td>
</tr>
<tr>
<td>XXI</td>
<td>Check Engine Tolerances</td>
<td>2</td>
</tr>
<tr>
<td>XXII</td>
<td>Use of Manuals</td>
<td>2</td>
</tr>
<tr>
<td>XXIII</td>
<td>Differential, Drive Train, Brakes</td>
<td>4</td>
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AGRICULTURAL MECHANICS - AGRICULTURAL BUILDING CONSTRUCTION
2nd. Semester

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<tr>
<td>UNIT I.</td>
<td>FFA and Orientation</td>
<td>3</td>
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<tr>
<td>UNIT II.</td>
<td>Basic Use of Carpentry Tools</td>
<td>5</td>
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<tr>
<td>UNIT III.</td>
<td>Reading and Using Drawings</td>
<td>5</td>
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<td>UNIT IV.</td>
<td>Building Materials</td>
<td>2</td>
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<td>UNIT V.</td>
<td>Concrete Work</td>
<td>5</td>
</tr>
<tr>
<td>UNIT VI.</td>
<td>Floor and Wall Framing</td>
<td>10</td>
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<tr>
<td>UNIT VII.</td>
<td>Roof Framing</td>
<td>10</td>
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<td>UNIT VIII.</td>
<td>Figuring Bills</td>
<td>2</td>
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<tr>
<td>UNIT IX.</td>
<td>Caring for Lumber</td>
<td>2</td>
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<tr>
<td>UNIT X.</td>
<td>Nail and Screw Selection</td>
<td>2</td>
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<td>UNIT XI.</td>
<td>Measuring and Marking Wood</td>
<td>1</td>
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<td>UNIT XII.</td>
<td>Construction and Maintenance of Fences</td>
<td>5</td>
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<td>UNIT XIII</td>
<td>Painting, Refinishing and Glazing</td>
<td>3</td>
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<tr>
<td>UNIT XIV.</td>
<td>Rural Electrification</td>
<td>5</td>
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<td>UNIT XV.</td>
<td>Individual Project</td>
<td>27</td>
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<td>Career Awareness</td>
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<td>Shop Safety</td>
<td>2</td>
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<td>UNIT V</td>
<td>Advanced Welding Skills</td>
<td>14</td>
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<td>UNIT VI</td>
<td>Land Description</td>
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<td>Farm Shop Metal Work</td>
<td>10</td>
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<td>UNIT VIII</td>
<td>Farm Machinery</td>
<td>14</td>
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<tr>
<td>UNIT IX</td>
<td>Electricity</td>
<td>10</td>
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<td>6</td>
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<tr>
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<td>Forge Work</td>
<td>4</td>
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<td>UNIT XII</td>
<td>Operation and Use of Tractor</td>
<td>10</td>
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<tr>
<td>UNIT XIII</td>
<td>Lathe Work</td>
<td>12</td>
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<td>Milling Machine</td>
<td>10</td>
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<td>UNIT XV</td>
<td>Project Planning</td>
<td>3</td>
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<td>UNIT XVI</td>
<td>Individual Projects</td>
<td>60</td>
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</table>
ORNAMENTAL HORTICULTURE

Review Committee
Geraldine Couture
Patricia Freeman
Tim Hicks

Shadle Park, Spokane
Ferris, Spokane
Battleground

For additional reference books and instructional materials, see List of Reference Books and Instructional Materials, submitted by Dr. Charles Pfeiffer. Available through Agricultural Education Office of S.P.I.
#BEGINNING ORNAMENTAL HORTICULTURE

##UNIT I. Overview of Horticultural Industry

- A. Career Opportunities
- B. Career Counseling
- C. How to Get a Job
- D. Job Skills
- E. Horticultural Professional Organizations
- F. Field Trips to Related Industries

##UNIT II. Plant Classification

- A. Principles
- B. Identify all Plants

##UNIT III. Plant Growth, Structure Reproduction

##UNIT IV. Climate and Zonation

##UNIT V. Soils and Fertilization

- A. Structure and Origin
- B. NPK
- C. Plant Mixes
- D. Artificial Soil
- E. Composting

##UNIT VI. Growing Structures

- A. Greenhouse and Equipment
- B. Gardening under Lights
- C. Dish Gardens and Terraria
- D. Plant Nursery
- E. Hot Beds, Cold Frames, Lath Houses

##UNIT VII. Plant Disorders

- A. Weeds
- B. Diseases
- C. Insects
- D. Management Practices

##UNIT VIII. Safety

- A. Pesticides
- B. Equipment
- C. Tools
UNIT IX. Floriculture (Will vary with instructor and program)

A. Identity and care
B. Know Equipment
C. Arranging
D. Corsage Making
E. Flower Shows
F. Industry Skills
G. Holiday Specials (Wreathes etc.)

UNIT X. FFA Leadership

A. Parliamentary Procedure
B. Projects
C. Record Keeping
D. Contests

UNIT XI. Landscaping

A. Principles of Design
B. Site Analysis
C. Drawing to Scale
D. Plant Selection
E. Construction and Maintenance
F. Cost Analysis
G. Turf Management

UNIT XII. Horticulture Crops

A. Vegetable Garden
B. Fruit Growing
C. Ornamentals
D. Bedding Plants
E. Nursery

UNIT XIII. Plant Propagation

A. Asexual
B. Sexual
ADVANCED ORNAMENTAL HORTICULTURE

May be with a cooperative work experience. Program will reflect what has been covered in Beginning Ornamental Horticulture.

UNIT I. Job Skills
A. Business Education
B. Marketing
C. Public Relations
D. Co-ops
E. How to do Business

UNIT II. Greenhouse Management
A. How to Grow Specific Crops

UNIT III. Marketing Horticultural Crops

UNIT IV. Construction
A. Greenhouses
B. Landscape
C. Planters

UNIT V. Floriculture - Advanced Design
A. Macrame
B. Funeral and Wedding Work

UNIT VI. Propagation - Advanced Techniques

UNIT VII. Advanced Plant I.D.

UNIT VIII. FFA Activities for Advanced Leadership
A. Supervised Work Experiences or Home Projects
B. Contests
C. State Award Applications

UNIT IX. Landscape Design
A. Design to Scale
B. Model to Scale
C. Project
   1. Cost Analysis
UNIT X. Flower Show

A. Selection of Chairman and Committees
B. Theme
C. Printing Program
D. Designing Entries
E. Staging the Show
F. Supervising and Hosting Show
G. Application for State and National Awards
   Through Washington Federation of Garden Clubs

UNIT XI. Landscape Maintenance

A. Yard and Lawn Work
B. Pruning
C. Bidding and Estimates
D. Filing Contracts
E. Keeping Records

UNIT XII. Cooperative Work Experience

A. School Flower Shop
B. Local Business
C. Keep Daily Records

It is recommended that the advanced program (2nd. or 3rd. year) use the Washington Certified Nurseryman's manual for reference and that the passing of the test given by the nurserymen will be the basis for evaluation of the advanced program, unless student interest is in other fields.

With the consent of the instructor, the students should be able to have a work experience program with a related business in the field of their choice.

These course outlines were designed to standardize the horticulture curriculum so that a student completing a course in the State of Washington will have become familiar with the basics required for an understanding and for job entry in the horticulture field.

Further studies will reflect the interest of the student and the expertise of the instructor involved.

In no way is this to be construed as to exclude certain horticulture subjects or that all these materials must be covered in depth to maintain a good program.
Ornamental Horticulture

Basic Texts

*** Sunset Western Garden Book, Lane Magazine Book Co.
*** Certified Washington Nurseryman's Training Manual

Major References

** Exotica - Pictorial Encyclopedia, Rutherford
** Plant Propagation, Hartman Kester
** Principles and Practices, Prentice Hall
** Ball Red Book, George Ball Inc.
*** Horticulture References, Pennsylvania State University
*** Homescaping Bulleting - Available free through County Agent
*** Sunset Books, Lane Magazine Book Co.
*** Time-Life Books
   * Western Fertilizer Handbook
*** Encyclopedia of Organic Gardening
** Houseplants for Purple Plum
*** Greenhouse Crop Production, Pennsylvania State University
*** Greenhouse Flowers and Bedding Plants, Pennsylvania State University

Bulletins

*** Homescaping, Cooperative Extension Service
*** Flower Arranging #310, Michigan State Horticulture manuals
   available through state office

Visuals

***Horticulture set slides and film strips, Cal. Poly
***Plant Life Set, Encyclopedia Britannica
**Ohio State Landscaping, etc., slides
***Certified Nursery Manual Plant Id Set - available through
   Steve Nord - $100.00 - Plant I.D. Media Systems
***Greenhouse and Related Structures, Ag. Ed. Curriculum Materials
***Landscape Design, Flowers for Garden Color, Designing with
   Flower and Decorative Materials, Ag. Ed. Curriculum Materials

Magazines

***Plants Alive
***Organic Gardening
 *Horticulture
***House Plants and Porch Gardens
***Sunset
 **Florist - (Floral Delivery
 *Florist - Review
 **Spirit - (Telaflorist Delivery

***Most Valuable
 ** Desirable
 * Helpful but not essential
FORESTRY I - One Year

Review Committee

Ron Nilson Morton
Alf Ladderud Kent
Dave Trier Tacoma

The following is a composite outline of units presently taught throughout Washington State in Vocational Forestry. The units have been tentatively grouped into time blocks with a range of time recognizing differences in the needs for different parts of the State.

The grouping is based on a logical sequence for presenting the subject matter, however, factors such as local conditions, weather and other factors might make a change of sequence necessary.
FORESTRY I

UNIT I. Introduction
   A. Course Requirements
   B. FFA
   C. Job Experience

UNIT II. History and Significance of Forestry
   A. State of Washington
   B. United States
   C. World

UNIT III. Dendrology
   A. Identification and Use of the Major Trees in Washington

UNIT IV. Regeneration
   A. Cone Harvests
   B. Genetics
   C. Nursery Practice
   D. Site
   E. Planting

UNIT V. Soils
   A. Physical and Chemical Properties of the Soil as Related to Forest Use

UNIT VI. Silvics
   A. Botany of the Tree as Related to Forestry Practices

UNIT VII. Silviculture - Forest Stand Improvement
   A. Fertilizing
   B. Thinning
   C. Brush and Weed Control
   D. Other

UNIT VIII. Forest Protection
   A. Against Disease
   B. Against Insects
   C. Against Animal Damage
   D. Against Man

HOURS
3 - 5
5 - 10
10 - 20
5 - 10
5 - 10
2 - 5
10 - 30
5 - 10
<table>
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<tr>
<td>IX.</td>
<td>Maps and Legal Description of Property</td>
<td>10 - 15</td>
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<td>X.</td>
<td>Survey and Compass Work</td>
<td>10 - 20</td>
</tr>
<tr>
<td>XI.</td>
<td>Timber Cruising and Log Scaling</td>
<td>5 - 10</td>
</tr>
<tr>
<td>XII.</td>
<td>Logging Practices</td>
<td>5 - 10</td>
</tr>
<tr>
<td>XIII.</td>
<td>Safety in the Woods</td>
<td>1 - 2</td>
</tr>
<tr>
<td>XIV.</td>
<td>Chainsaw Use and Maintenance</td>
<td>10 - 20</td>
</tr>
<tr>
<td>XV.</td>
<td>Marketing and Grading</td>
<td>2 - 5</td>
</tr>
<tr>
<td></td>
<td>A. Standing Timber</td>
<td></td>
</tr>
<tr>
<td></td>
<td>B. Logs</td>
<td></td>
</tr>
<tr>
<td></td>
<td>C. Timber Products</td>
<td></td>
</tr>
<tr>
<td></td>
<td>D. Other</td>
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<td>XVI.</td>
<td>Forest Economics</td>
<td>2 - 5</td>
</tr>
<tr>
<td>XVII.</td>
<td>Wood Technology</td>
<td>2 - 5</td>
</tr>
<tr>
<td>XVIII.</td>
<td>Christmas Tree Production</td>
<td>5 - 10</td>
</tr>
<tr>
<td>XIX.</td>
<td>Forest Laws and Regulations</td>
<td>1 - 2</td>
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<td>XX.</td>
<td>Watersheds</td>
<td>1 - 2</td>
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<td>XXI.</td>
<td>Recreation</td>
<td>1 - 2</td>
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<tr>
<td>XXII.</td>
<td>Range</td>
<td>1 - 2</td>
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<tr>
<td>XXIII.</td>
<td>Wildlife and Fisheries</td>
<td>5 - 10</td>
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<td>XXIV.</td>
<td>Careers</td>
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Forestry I - Basic Texts

Trees of Washington, Washington State University
Safety Standards for Logging Operations, Department of Labor and Industry, Washington St.

Stoddard, Forestry Practice
Extension Bulletins, U.S. Forest Service
Trier, Forest Conservation

Major References

Extension Bulletins, Cooperative Extension Service
Forest Service Bulletins, U.S. Forest Service
Game Dept. Bulletins, Washington State Department
Commercial Company Bulletins
Forbes, Forestry Handbook
Meyer, et al, Forest Management
Your Trees - A Crop
Forest Practices Curriculum Guide, Curriculum Management Center
Shirley, Forestry and its Career Opportunities, McGraw Hill
Guise, The Management of Farm Woodlands, McGraw Hill
Trefthen, Wildlife Conservation, D. C. Heath Co.
Lyon, Trees, Shrubs and Flowers to Know In Washington

Visuals

Industrial Safety Films, Department of Labor and Industries
Forest Service Films, U. S. Forest Service
Game Dept. Films, Washington State Department of Game
Wanless, Aerial Sterograms
Multiple Use Management Packet, U.S.F.S.
National Grassland, State Film Library
Tree Identification, Vocational Education Productions
Land Management Visuals, Washington State University
Tree Charts, St Regis, GP and others
Grass Transparency Masters, Washington State University
Working Forest
Northwest Empire
Fire Weather
Careers in Forestry
Careers in Logging

-33-
The purpose of this course is to provide each student with an understanding of the various forest occupations, needed skills and various forest functions so that they may develop vocational proficiencies which will lead to gainful employment upon graduation.

Its purpose is also to teach the necessary theory of conservation, resource management and mechanical application in order to produce a trainee who appreciates the complete picture of forest conservation, either toward the ends of immediate employment, or to pursue a career in technical, or professional forestry.
LOGGING AND FORESTRY PRACTICES

UNIT I. Orientation

A. Purpose of Course
B. Classroom & Laboratory Procedures
   1. Roll Check
   2. Conduct in Class
   3. Tardiness and Attendance
   4. How to ask a Question
   5. Evaluation of Instruction
   6. Grading System
C. Course Requirements
   1. Student Notebook
   2. Course Fees
   3. Clothing
   4. Job Experiences
   5. FFA
   6. Safety
D. Teaching Procedures and Facilities Outside the Classroom
   1. Lab Area
   2. Field Trips
   3. Land Laboratory
   4. Supervised Work Experience Visits
   5. Field Days and Contests
   6. Safety
E. Reference Materials
   1. Textbooks
   2. Reference Books
   3. Bulletins
   4. Magazines
   5. Mounts, Charts and other Aids

UNIT II. History of Logging in the Pacific Northwest

A. Chapter in Textbook
B. Resource Books on "Old Time" Logging: Timber, This Was Logging, etc.
C. Springboard and How it was Used
D. Locating and Naming Early Day Logging Companies in Local Area

UNIT III. Basic Principles Involved in Logging (General Introduction)

A. Kinds of Trees in Pacific Northwest
B. General Type or Terrain
UNIT III. Basic Principles Involved in Logging, Cont.

C. Felling and Bucking
D. Yarding of Logs
   1. High Lead
   2. Cat Yarding
   3. Rubber Tired Skidder
   4. Sky Line
   5. Slack Line
   6. Balloon Logging
E. Loading of Logs
F. Transporting Logs to Mills
G. The Manufacture of the Logs into all the Various Wood Products
H. What Determines How a Tract of Timber Will be Logged

UNIT IV. Forest Regeneration 5 - 10

A. Site Preparation
B. Nursery and Transplant Culture
C. Hand Planting
D. Seeding

UNIT V. Cable 2 - 5

A. Why it is Used and Purpose
B. Kinds of Cable and How to Recognize the Various Sizes
C. Costs of Different Sizes of Cable
D. General Care of Cable and Proper Use
E. Splicing
   1. Tools to be used
   2. 3 Tuck Eye Splice
   3. Long Splice
   4. Short Splice
   5. "Farmer's Eye"

UNIT VI. Power Saws 20 - 30

A. What They do and What They Won't Do
B. Various Kinds and Sizes
C. A Short History of Their Evolution in Logging
D. Operation of Saw
E. How to Service and Care for the Saw
F. Fuel, Kind and How to Prepare it
UNIT VI
Power Saws, Cont.
G. Filing of Saw Chains
   1. How and Why the Chain Cuts (by its design)
   2. Kinds of Files
   3. Matching File and Chain
   4. Angle and Stroke of File
   5. Checking and Filing Riders
   6. When to File and Keeping Chain Sharp

UNIT VII.
Christmas Tree Culture
   A. Theory of Culture
   B. Species Characteristics
   C. Pruning and Shaping
   D. Bough Cutting and Brush Picking

UNIT VIII.
Forest Protection
   A. Fire Control
   B. Forest Insect Identification
   C. Forest Disease Identification
   D. Sanitation Inspection and Control Methods

UNIT IX.
Forest Stand Improvements
   A. Thinning (selective and strip)
   B. Thinning by-products
      1. Post Treating
      2. Poles
      3. Shake Splitting
   C. Pruning
      1. Dry
      2. Green
      3. Bud
   D. Fertilizing
   E. Chemical Controls

UNIT X.
Forest Measurement
   A. Sample Plot Cruising (prism)
   B. Strip Cruising
   C. Variable Plot Cruising (prism)
   D. Use Compass, Dumpy Level and Transit

UNIT XI.
High Lead Logging
   A. Evolution From Ground Logging
   B. Spar Tree, Selection, Topping, Rigging
   C. Portable Spar Tree
   D. Guy Lines
UNIT XI

High Lead Logging, cont.

E. Blocks

F. Donkey
   1. Main Line
   2. Haul Back
   3. Straw Line

G. Laying Out Roads

H. Flopping Lines

I. Changing Roads

J. Staying Out of the Bight

K. Cold decks and Hot decks

L. Landing and Loading Operations

M. Rigging Chokers, Butt Rigging, Guy Lines
   Block Straps (Lines on Donkey)

N. Guy Line Stumps

O. Variations
   1. Slack Line
   2. Sky Line
   3. Grabinski System
   4. Inter-locking Skidder

P. High Lead Signals
   1. Standard High Lead Signals as
      Recommended by State Safety Division

Q. Hand Signals
   1. Standard Hand Signals from State
      Safety Manual

UNIT XII.

Rubber Tired Skidder

A. Operation

B. Daily and General Maintenance

C. Skidder as Compared to Crawler Tractor

D. How to Get a Log per Minute

UNIT XIII.

Crawler Tractor Logging: Bob Tail and With
Arch and Grapple

A. Operation

B. Daily and General Maintenance

C. Compared to Skidder and Highload

UNIT XIV.

Felling and Bucking

A. "Looking at Whole Tree for Falling"
   1. Lay of Land
   2. Other Standing Trees
   3. "Widow Makers", Hazards, Natural and
      Man Made
   4. How to Save the Tree
   5. Escape Route
UNIT XIV  Felling and Bucking, cont.
6. Clearing Brush Away from Tree
7. Wind Velocity and Direction
8. Type of Undercut, Safety Notch
9. Hinge or Holding Wood
10. Controlled Falling
B. Bucking the Tree into Log Lengths
1. Measuring for Grade, Ease of Bucking, Safety, Type of Logs Needed
2. Side Bind
3. Tight Wood and Compressed Wood
4. Undercutting - When and Why
5. Release Cut and Bucking from Uphill Side

UNIT XV.  Choker Setting  2 - 5
A. What a Choker Consists of
B. Kinds, Lengths and Line Sizes of Chokers
C. Correct Way of Setting Chokers
D. Care and Muse of Chokers
E. High Lead vs. Cat or Skidder Choker
F. Tricks in Being a Good Choker Setter
G. "Best" Job in the Woods
H. Dangers in Setting Chokers
I. "Trick" in Fighting Hang-Ups

UNIT XVI.  Job Titles and Duties in All Types of Logging  2 - 5
A. Camp Push
B. Side Rod
C. Bull Buck
D. Hook Tender
E. Riggin Slinger
F. Climber
G. Chokerman
H. Powder Monkey
I. Donkey Puncher
J. Cat Skinner
K. Whistle Punk
L. Shovel Operator
M. 1st, 2nd and 3rd Loader

UNIT XVII.  Sealing and Grading Logs  2 - 5
A. Why?? - Purpose, Theory, Philosophy
B. Bureau Scale (Scribner's)
C. Truck Scale
D. Woods Scale
UNIT XVII. Sealing and Grading Logs, cont.
E. Water Scale
F. Roll Out Scale
G. How Logs are Measured
H. Defect in Logs
I. Grading and Scaling Rules
J. Species of Logs
K. Net Scale
L. Gross Scale
M. Cubic Scale
N. Board Foot Scale
O. Scale by Weight
P. "CUNIT" Scale

UNIT XVIII. Loading of Logs 2 - 5
A. "A" Frame
B. Crotch Line
C. Hay Rack
D. Heel Book
E. Shovel
F. Self-loading Trucks
G. Par-buckle (Large Logs)
H. Roll Way
I. Grapple

UNIT XIX. Climbing 1 - 5
A. Why
B. Equipment
C. Techniques
D. Dangers
E. Safety Measures

UNIT XX. Splitting Wood 2 - 5
A. Correct Use of Wedges
B. Correct Use of Malls
C. Measuring Wood: rick, cord
D. Best Type of Wood for Fireplaces

UNIT XXI Safety - In general, safety should be taught and emphasized from the first day, every day, every activity, every hour, to each individual and to the group as a whole.
UNIT XXI

Safety, cont.

A. Danger in Logging Operation
   1. Factors Involved
   2. Tremendous Weights Being Handled
   3. Powerful Forces Being Applied
   4. Unforeseeable Situation
   5. Constant Variable Factors Every Minute
B. "Each Man for Himself" philosophy in early day logging
C. Modern Philosophy of Industry Concerning Safety
D. What Safety Really Is
E. Who Is Responsible for Safety
F. When Accidents Happen, Why They Happen
G. The Human Factor
H. The State of Mind of the Individual When Accident Happened
I. "The Bight of the Line"
J. Hard Hats
K. Why Loggers Wear the Clothing They Do
L. "Horse Play" in the Logging Industry
M. First Aid
N. State Safety Manual

UNIT XXII

Hauling Logs

A. Getting Contract or Job
B. Going over Route
C. PUC Laws and Regulations
D. Local Weather Conditions
E. Type of Roads
F. Off-highway or Highway Haul
G. Job Rate Truck
   1. Brand
   2. Motor
   3. Frame
   4. Single axle vs. tandem axle
   5. Transmission
   6. Type of Rear Ends
   7. Tire size, and Capacity
H. Daily Truck Maintenance
I. Major Overhauls
J. Diesel Truck Maintenance
K. Jake Brakes
UNIT XXIII. Tree and Log Identification

A. With 2" x 2" Slides, Scaling Ramp Observation, and Actually Observing the Standing Tree
B. Needles
C. Bark
D. Where Growing
E. Color of Bark and Wood

UNIT XXIV. Rigging Blocks for Extra Power

A. One Block Power
B. A Luff Power
C. The Power of a Par-Buckle

UNIT XXV. The Worker

A. What You Sell When You Ask For a Job
B. What a "Work Day" Consists of
C. What Your Obligations Are to Your Employer
D. How To Be Favorably Noticed by Your Supervisor
E. How to Get Ahead
F. Being on Time and Being There Every Day
G. How to Get Fired
H. What Our System of Free Enterprise "USED TO BE" About
I. "Dead Wood"
J. Unions
K. "Pay Day"
L. "Quitting a Job"
Logging and Forestry Practices

Texts and References

Trier, Forest Conservation
Trees, Year Book of Agriculture, 1949
Pamphlet, Trees of Washington
Outdoors, Year Book of Agriculture, 1967
Forestry Handbook
Wackerman, Harvesting Timber Crops
Extension Bulletins
U.S.F.S. Bulletins
DNR Bulletins
Oregon Chain Manual

Visuals

Washington State Film Library
OSU Forestry Audio Visual Material
Weyerhauser Co.
Work of the Chokerman
Work of the Faller etc - Washington State Series
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