This 2+2 articulated curriculum for the occupation of forest technician includes the following: program results and benefits; job description—forest technician; curriculum objective; duty and task listings for forest technician; recommended secondary and postsecondary course options flowchart; recommended student prerequisites; basic outlines for secondary and postsecondary courses; reference materials list; line drawing of recommended facility; list of recommended tools and equipment; competency profile; student monitoring and follow-up; career ladder information; recommended teacher approval criteria; and articulation agreement. Substantial lists of reference materials include the following: a list of references by secondary course title, a general reference list supplemental to course listings, and postsecondary references. Fifteen forest technician duties are listed: cruise timber; timber sales security; timber acquisition; timber marking; herbaceous control, insect and disease control; supervision of employees and contractors; job improvement; environmental impact management; public relations; controlled burning; site preparation; regeneration; record management; and operate and maintain equipment. For each task under a duty, the following are given: performance objective, standard, materials needed, enabling objectives, and performance guides.
Prepared by
Walter York
for the
Texas Education Agency
Division of Vocational
Education

Conducted by:
Daingerfield-Lone Star
Independent
School District
and
Northeast Texas
Community College
Project Title: Linking the Last Two (2) Years of High School and the First Two (2) Years of a Postsecondary Agriculture Technology

Texas Education Agency
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Disclaimer:
This publication was prepared pursuant to a contract with the Texas Education Agency. Contractors undertaking such projects under government sponsorship are encouraged to express freely their judgement in professional and technical matters. Points of view or opinions of the contractors, therefore, do not necessarily represent official Texas Education Agency position or policy.
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A 2+2 articulated curriculum for the occupation of forest technician has been developed which includes:

- A brief description of the occupation of forest technician.
- The basic objective of the curriculum
- A flow chart showing the recommended secondary and postsecondary course options
- Recommended student prerequisites including academic courses
- Basic course outlines for grades 9-14
- A list of secondary reference materials
- A line drawing of recommended facilities
- A list of recommended tools/equipment and estimated costs
- A competency profile
- An example of the student monitoring and follow-up system
- Recommended teacher approval criteria
- A sample articulation agreement

The 2+2 articulated curriculum for the forest technician is presented on the following pages.

It is anticipated that other school districts and two year postsecondary institutions will be able to use the curriculum as a model for linking instructional activities of secondary and postsecondary education for the preparation of technical workers in the agricultural industry.
II. JOB DESCRIPTION: FOREST TECHNICIAN

The forest technician:

- Gathers information in the field.
- Reports the information gathered to supervision for analysis to determine appropriate field action.
- Carries out the appropriate action in the field.

The forest technician must be:

- Willing to work long hours
- Self motivated
- Physically fit
- Able to work alone or as a team member
- Willing to work with the public
- Willing to accept change
- Able to work under pressure/stress
- Able to make quick decisions based on current information and personal observation
- Willing to work under adverse conditions
- An outdoor person
III. CURRICULUM OBJECTIVE

The curriculum is designed to produce an individual with skills, knowledge, and abilities sufficient to begin work as a forest technician in either the private or corporate area of the forestry industry. The individual should perform safely and effectively in the position assigned to him by his employer. Graduates will be able to work independently or in a supervisory capacity.
The following is a chart showing the duty and task list for a forest technician. This list was compiled by a panel of forestry employees. The panel consisted of technicians/managers in the forestry industry.
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## FOREST TECHNICIAN

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<td>6. Operate and Maintain All Terrain Vehicles</td>
</tr>
</tbody>
</table>
DUTY:  A. CRUISE TIMBER

TASK:  1. Verify Property Lines and Ownership

*****************************************************************
Performance Objective: Given the materials listed below, verify property lines and ownership.

Standard: Property lines and ownership must coincide with official deeds and plat maps.


Enabling Objectives: Know how to read plat maps.
Know how to run a compass.

Performance Guide:

1. Contact current land owner if available
2. Locate subject tract of land on a highway map
3. Locate tract of land on aerial photographs and Tobin ownership and lease maps
4. Go to courthouse of county where tract is located to:
   a. Search Grantor/Grantee listings for owner’s name as it applies to this tract of land
   b. Locate field notes for land description
   c. Locate liens or other encumbrances
DUTY: A. CRUISE TIMBER

TASK: 2. Review Aerial Photographs

Performance Objective: Given the materials listed below, review aerial photographs.

Standard: Aerial photographs must be up to date and coincide with property in the plat or deed.


Enabling Objectives: Know how to read aerial photographs.
Know how to determine timber types.
Know how to determine boundary lines.
Know how to tell differences in hardwoods and pine stands.
Know the scale of your map.

Performance Guide:
1. Determine the map scale
2. Get maps from ASCS offices or tax appraisal offices
3. Locate the tract on an aerial photograph
4. Draw boundaries of tract on photo with grease pencil
5. Note surrounding lands
6. Plan cruise direction and intensity based on drainage areas and stand densities
DUTY: A. CRUISE TIMBER

TASK: 3. Draw a Field Map

*****************************************************************

Performance Objective: Given the materials listed below, draw a field map.

Standard: Map is to show accurate boundary lines, differences in timber, any creeks, upland or bottomland areas.


Enabling Objectives: Be able to read and understand aerial photographs.
Have basic knowledge of map scale.

Performance Guide:

1. Lay out the aerial photograph
2. Identify the boundary lines, fences, cross fences, creeks, encroachments, corners, etc.
3. Determine the timber types found on the aerial photograph
4. Determine which areas are upland and bottomland
DUTY: A. CRUISE TIMBER

TASK: 4. Estimate and Record Volume

********************************************************************************

Performance Objective: Given the materials listed below, estimate and record volume.

Standard: An accurate estimate of timber volume will be based on the timber cruise.

Materials Needed: Cruise Compass, Diameter Tape, Clinometer, Volume Tables, Calculator, Cruising Vest.

Enabling Objectives: Be able to run a compass.
Be able to assess tree height.
Be able to read a volume table
Be able to assess form class.

Performance Guide:

1. Put on cruising vest with appropriate equipment
2. Determine the type of cruise needed
3. Measure plot radius
4. Determine the diameter and height of each tree in each sample plot
5. Determine the form class (tree product, grade, classification, etc.)
6. Use the pine log volume tables to determine volume
7. Record information on tally sheets
DUTY:  A. CRUISE TIMBER

TASK:  5. Determine Stand Composition and Prescription

 Performance Objective: Given the materials listed below, determine the stand composition and prescription.

 Standard: All timber types must be determined and the land owner advised of needs to provide proper forest management practices.

 Materials Needed: Aerial Photographs.

 Enabling Objectives: Be able to understand tree types.
 Be able to determine upland and bottomland.
 Be able to read aerial photographs.

 Performance Guide:

 1. Study the aerial photographs
 2. Determine the timber types
 3. Discuss with the land owner his expectations from his timber stand
 4. Determine management plan
 5. Make recommendations to the land owner
DUTY:  A. CRUISE TIMBER

TASK:  6. Prepare Cruise Report

Performance Objective: Given the materials listed below, prepare a cruise report.

Standard: Prepare an accurate report that records timber types, volume of products, and value of each product.

Materials Needed: Good Quality Typewriter or Computer, Cruise Information at Hand.

Enabling Objectives: Have a knowledge of the timber market.

Performance Guide:

1. Determine the volume of the different wood products (by hand or using computer cruise program)
2. Assess the value of the different products
3. Prepare the report on the typewriter or computer
4. Make bid offer
**DUTY: B. TIMBER SALES SECURITY**

**TASK: 1. Review Contracts**

*****************************************************************************

**Performance Objective:** Given the materials listed below, review contracts.

**Standard:** The contract must be agreeable to both the timber buyer and the timber seller.

**Materials Needed:** Contract

**Enabling Objectives:** Have a knowledge of timber contracts.
Have a knowledge of common logging practices.

**Performance Guide:**

1. Review the contract
2. Have the seller review the contract
3. Adjust contract if necessary to satisfy both parties
4. Sign contract
DUTY: B. TIMBER SALES SECURITY

**TASK:** 2. Conduct Pre-Logging Conference

*****************************************************************

**Performance Objective:** Given the materials listed below, conduct a pre-logging conference.

**Standard:** Both the buyer and seller will know what will be harvested, the method used to harvest, and the condition of the property following harvest.

**Materials Needed:** Contract, Cruise Report, Aerial Photograph

**Enabling Objectives:** Be able to negotiate with both buyer and seller.

**Performance Guide:**

1. Explain to both buyer and seller what is being sold
2. Explain to the land owner how the timber will be harvested
3. Make sure the landowner understands and is satisfied with the property’s condition following the logging operation
DUTY: B. TIMBER SALES SECURITY

TASK: 3. Inspect Job Site

*******************************************************************

Performance Objective: Given the materials listed below, inspect the job site.

Standard: The job site will be inspected during harvesting for correct timber marketed and no excessive damage done to the property.


Enabling Objectives: Have a basic knowledge of logging practices.

Performance Guide:

1. Inspect the job site for marketable timber harvested
2. Inspect the job site for marketable timber not harvested
3. Inspect the job site for damage
DUTY: B. TIMBER SALES SECURITY

TASK: 4. Conduct Post Inspection of the Job Site

********************************************************************************

Performance Objective: Given the materials listed below, conduct a post inspection of the job site.

Standard: Final inspection of the job site will insure correct timber marketed and no excessive damage done to the property.


Enabling Objectives: Have a basic knowledge of logging practices.

Performance Guide:

1. Make final inspection for proper harvesting of timber
2. Make final inspection for unharvested timber
3. Make final inspection for property damage
DUTY:  C. TIMBER ACQUISITION

TASK:  1. Contact Land Owner

******************************************************************************

Performance Objective: Given the materials listed below, contact the land owner.

Standard: The land owner must be contacted to determine his interest in selling his timber.

Materials Needed: References from Former Jobs, Land Owner.

Enabling Objectives: Have a basic knowledge of timber management.

Performance Guide:

1. Prepare references from past jobs
2. Make initial contact through telephone or letter
3. Follow up initial contact with personal visit
DUTY: C. TIMBER ACQUISITION

TASK: 2. Negotiate the Contract

Performance Objective: Given the materials listed below, negotiate the contract.

Standard: The contract should be satisfactory to both the buyer and the seller.


Enabling Objectives: Have a good knowledge of timber contracts.

Performance Guide:

1. Present the contract to the buyer for approval
2. Present the contract to the seller for approval
3. Make adjustments in the contract as needed to satisfy both the buyer and the seller
**DUTY:**  C. TIMBER ACQUISITION  

**TASK:**  3. Execute the Contract  

******************************************************************

**Performance Objective:** Given the materials listed below, execute the contract.

**Standard:** The contract will be signed by the notary and filed in the local courthouse.

**Materials Needed:** Contract.

**Enabling Objectives:** Have a good knowledge of timber contracts.

**Performance Guide:**

1. Have the buyer and seller sign the contract  
2. Have the contract notarized  
3. File the contract in the county courthouse
DUTY: D. TIMBER MARKING

TASK: 1. Determine the Production Objective

Performance Objective: Given the materials listed below and a tract of timber, determine the production objective for that tract of land.

Standard: Given the land owners priorities, determine course of action and develop a plan for marking, selling and harvesting trees that will meet land owners priorities.

Materials Needed: Land with Timber, (Tract of Timber), Hand Compass, Tally Book, Tally Sheet, Pencil, Colored Flagging Tape, Diameter Tape, Biltmore Stick, Aerial Photographs of Tract, Topographic Map.


Performance Guide:

1. Sketch tract on aerial photograph
2. Sketch tract on topographic map
3. Make preliminary timber-type map
4. From topographic layout cruise lines perpendicular to the drainage
5. Collect data in field
   a. Pace from property edge to first cruise line
   b. Pace to first plot center
   c. Inventory trees in plot (tally)
   d. Repeat steps A, B and C then ground verify timber type map
6. Calculate tract volume data (species, diameter, heights and volume)
7. Using land owners priorities decide which species and six classes are to be marked
8. Write plan for marking timber
DUTY: D. TIMBER MARKING

TASK: 2. Mark the Timber According to the Plan

******************************************************************************

Performance Objective: Given the materials listed below mark the timber according to the plan.

Standard: Mark the timber according to the plan so that all saleable timber can be marketed.

Materials Needed: Tree Marking Gun and Paint, Diameter Tape, Biltmore Stick, Tally Book and Tally Sheets, Snake Boots.

Enabling Objectives: Knowledge of timber marking techniques and timber marking plan.

Performance Guide:

1. Begin marking near property edge, according to plan
2. Apply two marks to each tree, one at ground line and one at head height
3. Mark all trees on same side throughout tract
4. Tally each marked tree by diameter class and merchantable height.
DUTY:  D. TIMBER MARKING

TASK:  3. Prepare the Tally Sheet

*******************************************************************************

Performance Objective:  Given materials listed below and a tract of marked timber, prepare the tally sheet.

Standard:  The tally sheet must be accurate for estimating the value of the products on the tract.

Materials Needed:  Calculator, Timber Volume Tables, Pulpwood Volume Tables, Pencil.

Enabling Objectives:  Know how to work a calculator.
Know how to interpret the timber volume and pulpwood volume tables and properly prepare the tally sheet.

Performance Guide:

1. Calculate numbers of trees in each diameter and height class on a table
2. Using volume tables, calculate volumes in each diameter and size class recorded in the previous table
DUTY: E. HERBACEOUS CONTROL

TASK: 1. Determine the Control Objective

Performance Objective: Given materials listed below and a tract of land, determine the control objective.

Standard: Competing herbaceous plants must be controlled to allow existing desirable plants to gain maximum production or to prepare a site for planting.


Enabling Objectives: Have a knowledge of forestry practices and control methods. Be able to identify competing herbaceous plants.

Performance Guide:

1. Make an on-site investigation to determine the objectives of the land owner
2. Make recommendations to meet the control objective
DUTY: E. HERBACEOUS CONTROL

TASK: 2. Determine the Method of Control

Performance Objective: Given the materials listed and a tract of land, determine the method of control.

Standard: The method of control of competing herbaceous plants is dependent upon the types of plants and the severity of the growth of the plants.


Enabling Objectives: Have a knowledge of the different control methods (mechanical and chemical). Be able to identify competing Herbaceous plants.

Performance Guide:

1. Determine undesirable plants
2. Select method of control
   A. Mechanical
   B. Chemical
3. Plan timely application of control method
4. Employ method of control
   A. Mechanical
   B. Chemical
5. Use proper safety precautions
DUTY: E. HERBACEOUS CONTROL

TASK: 3. Use Mechanical Control

Performance Objective: Given materials listed below and a tract of land, control herbaceous plants mechanically.

Standard: Herbaceous plants will be controlled in a timely manner to ensure seedling survival.

Materials Needed: Tractor, Shredder or Mower, Goggles, and Gloves.

Enabling Objectives: Have knowledge of operating tractor, adjusting and maintaining mower.

Performance Guide:

1. Determine undesirable plants
2. Determine time of control
3. Adjust and lubricate equipment
4. Mow competing plants
5. Check for regrowth of competing plants
6. Use proper safety precautions with equipment
DUTY: E. HERBACEOUS CONTROL

TASK: 4. Use Chemical Control

Perfomance Objective: Given materials listed below and a tract of land, control herbaceous plants with chemicals.

Standard: Herbaceous plants will be controlled with chemicals in a timely manner to ensure seedling survival.

Materials Needed: Chemicals (approved), Protective Clothing, Respirator, Rubber Gloves, Goggles, Hand-He? Pressure-type Sprayer, Tractor with PTO, Airplane or Helicopter.

Enabling Objectives: Know which chemicals are registered for use in controlling herbaceous plants.
Know how to properly mix chemicals for application.
Be able to identify competing plants.
Be able to operate the various types of equipment.

Performance Guide:

1. Determine herbaceous plants to be controlled
2. Determine kinds and amounts of chemicals to be applied
3. Determine the best time for application of chemicals for proper control
4. Adjust sprayer for chemical application
5. Apply chemicals for herbaceous control
6. Check field to determine success of chemical application
7. Use proper safety precautions with chemicals and equipment
DUTY: E. HERBACEOUS CONTROL

TASK: 5. Perform Post-Job Inspection

Performance Objective: Given materials listed below and a tract of land, perform post-job inspection to determine herbaceous control.

Standard: Herbaceous control must be 85% effective as determined by post-job inspection.


Enabling Objectives: Be able to identify competing plants.

Performance Guide:

1. Schedule time to perform post-job inspection
2. Make an on-site investigation of herbaceous plants controlled
3. Record findings for documentation
4. Schedule re-application, if necessary
**Duty:**  F. Insect and Disease Control

**Task:** 1. Detect Insect or Disease

*******************************************************************************

**Performance Objective:** Given materials listed below and a stand of trees, detect insects or disease.

**Standard:** Insects or disease in a stand of trees must be detected early to prevent excessive damage.

**Materials Needed:** Vehicle or Airplane, and Aerial Photograph.

**Enabling Objectives:** Know of various insects or diseases that infest trees.

**Performance Guide:**

1. Determine likelihood of infestation
2. Perform observation for insect or disease infestation
3. Record exact location of infestation on aerial photograph
4. Determine type of insects or disease
DUTY: F. INSECT AND DISEASE CONTROL

TASK: 2. Verify and Assess Infestation

*****************************************************

Performance Objective: Given the materials listed and a stand of trees, verify and assess infestation.

Standard: An infestation in a stand of trees has to be verified and assessed in order to determine a control.

Materials Needed: Vehicle, Pencil, Writing Paper, Control Guides, and Aerial Photograph.

Enabling Objectives: Have a knowledge of various insects and diseases that infest trees.

Performance Guide:

1. Determine exact location of infestation on aerial photograph
2. Travel to site of infestation to verify and assess
3. Make visual observation of infestation for verification
4. Assess infestation to determine control
DUTY: F. INSECT AND DISEASE CONTROL

TASK: 3. Determine and Implement Control

Performance Objective: Given materials listed below and a stand of trees, determine and implement control of insects and disease.

Standard: Insect and disease control is necessary in order to prevent excessive damage to an infected stand of trees.


Enabling Objectives: Have knowledge of insects and diseases. Know how to use control methods. Be familiar with vendors to perform control methods.

Performance Guide:

1. Determine kind of infestation in the stand of trees
2. Make recommendation of control method
3. Enlist or secure a vendor to perform the control method
4. Mark treatment area where control methods will be applied
5. Observe and supervise implementation of control methods
6. Use proper safety precautions
DUTY: F. INSECT AND DISEASE CONTROL

TASK: 4. Monitor the Control Measures

**************************************************

Performance Objective: Given materials listed below and a stand of trees, monitor the control measures.

Standard: Control measures will be monitored to ensure a successful control of infestation to obtain maximum production.


Enabling Objectives: Know of control measures.
Know of insects and diseases.

Performance Guide:

1. Observe and supervise implementation of control measures
2. Give instructions to alter control measures as needed to obtain control
3. Verify success of control measures
DUTY: F. INSECT AND DISEASE CONTROL

TASK: 5. Perform Post-Job Inspection

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Performance Objective: Given materials listed below and a tract of land, perform post-job inspection to determine herbaceous control.

Standard: Herbaceous control must be 85% effective as determined by post-job inspection.


Enabling Objectives: Be able to identify competing plants.

Performance Guide:

1. Schedule time to perform post-job inspection
2. Make an on-site investigation of herbaceous plants controlled
3. Record findings for documentation
4. Schedule re-application, if necessary
DUTY: G. SUPERVISION OF EMPLOYEES AND CONTRACTORS

TASK: 1. Schedule Employees Work

Performance Objective: Given materials listed below and availability of labor, labor timetable, tax assignment, and supervision plan, develop employee work schedules.

Standard: The work schedule must provide the labor and time allotment for task performance.

Materials Needed: Calendar and Work Record Book.

Enabling Objectives: None.

Performance Guide:

1. Assess amount and ability of available labor
2. Assess times and season for work assignment
3. Assess minimum and maximum labor needs
4. Determine responsibility for work tasks
DUTY: G. SUPERVISION OF EMPLOYEES AND CONTRACTORS

TASK: 2. Assign Employees Work

Performance Objective: Given the materials listed below, assign duties to employees.

Standard: Duty assignments must outline work to be performed, standard of acceptable performance, and a designated time frame.

Materials Needed: Employee, List of Duties to be Performed, Time when Duties are Expected to be Completed.

Enabling Objectives: Know how to perform all duties.

Performance Guide:

1. Assign duties to be performed by employees
2. If necessary, explain and demonstrate the performance of each duty and the standard of acceptable performance
3. Inform employee about time for completion of assignment
4. Ask for and answer all questions thoroughly
5. Follow up on all duties that were assigned
DUTY: G. SUPERVISION OF EMPLOYEES AND CONTRACTORS

TASK: 3. Train Employees

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Performance Objective: Given materials listed below, train employees.

Standard: Training must be conducted to meet specified employee needs.

Materials Needed: Employees, Tools and/or Equipment for Each Job.

Enabling Objectives: Have knowledge of the specific jobs to be performed by the employee, and the ability to convey that knowledge.

Performance Guide:

1. Assess workers' background and experience
2. Select task(s) for which skill(s) is lacking
3. Demonstrate the performance of each task
4. Have workers demonstrate same task(s)
5. Evaluate worker's performance
6. Retrain workers where needed
DUTY: G. SUPERVISION OF EMPLOYEES AND CONTRACTORS

TASK: 4. Supervise Employee Activities

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Performance Objective: Given materials listed below, supervise employee activities.

Standard: Supervise employees to assure that the job and/or tasks are properly completed.


Enabling Objectives: Know how to perform the jobs and/or tasks according to company standards.

Performance Guide:

1. Review list of employees
2. Review work schedule of each employee
3. Observe each employee as they perform their assigned task
4. Determine that each employee is performing their task correctly
5. Describe and/or demonstrate the proper way to perform a task if an employee's performance does not meet company standards
6. Repeat observations on a regular basis
DUTY: G. SUPERVISION OF EMPLOYEES AND CONTRACTORS

TASK: 5. Negotiate Contract with Contractors

Performance Objective: Given materials listed below, negotiate contracts with contractors.

Standard: Contract must contain all required information, and must meet contractor and contracting company requirements.

Materials Needed: Written contract(s), Contractor Representative Attorney, and Previous contracts.

Enabling Objectives: Have knowledge of the job to be completed, company standards, and the time table in which the job is to be completed.

Performance Guide:

1. Review contract carefully
2. Verify information
   A. Terms of payment
   B. Time table for job completion
   C. Company Standards
   D. Description of job to be completed
   E. Incentives or penalties
   F. Stipulation of unusual restrictions or requirements
3. Make sure that you and the contractor understand all parts of the contract
4. If other contracts are available, make comparisons
5. Consult attorney as required
6. Obtain approval from company supervisor
7. Sign Contract
DUTY: G. SUPERVISION OF EMPLOYEES AND CONTRACTORS

TASK: 6. Monitor Contractor’s Work

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Performance Objective: Given materials listed below, supervise contractor’s work.

Standard: Monitor contractor to a,,sure that the job is being completed correctly.

Materials Needed: Written Contracts, Contractor Representative, Work schedule, and Contractor List.

Enabling Objectives: Know how to read and understand terms of a contract.
Have knowledge of company standards.

Performance Guide:

1. Review list of contractors
2. Review contract
3. Observe contractors as they perform assigned job
4. Determine if the job is being performed according to the terms of the contract and the company standards
5. Record any problems that may exist and prepare a report
6. Record date and time that job is completed and prepare a report
7. File copies of all reports
8. Send copies of reports to contractor representative and company supervisor
DUTY: G. SUPERVISION OF EMPLOYEES AND CONTRACTORS

TASK: 7. Perform Post Inspection of Contractor's Work

Performance Objective: Given materials listed below, perform post inspection of contractor's work.

Standard: Perform post inspection of contractors work to determine if job was performed according to contract specification.

Materials Needed: Written Contract, and Contractor Representative.

Enabling Objectives: Know terms of contract. Know the expected results of the work performed. Know how to fill out a report.

Performance Guide:
1. Review contract carefully
2. Familiarize yourself with all details of the job that was to be completed
3. Allow contractor representative to be present while conducting inspection
4. Inspect job site to determine if all points of the contract were completed
5. Make notes of any areas of the contract that were not fulfilled
6. Prepare and present a report to the contractor and company supervisor
   A. List deficiencies
   B. Make recommendations
DUTY: H. JOB IMPROVEMENT

TASK: 1. Evaluate Existing Jobs

Performance Objective: Given materials listed below, evaluate existing jobs.

Standard: Perform evaluation of existing jobs to determine areas in need of improvement.

Materials Needed: Job or Task Descriptions, and Evaluation Forms.

Enabling Objectives: Know how to fill out evaluation forms.
Know how to perform each job that is to be evaluated.

Performance Guide:

1. Review each job description
2. Obtain or develop an evaluation form
3. Determine how the job is being performed at present
4. Make notes on areas where improvement is needed
5. Make recommendations on ways of improvement
6. File a copy of the completed evaluation form and the recommendations for improvement
7. Submit a copy to your company supervisor
DUTY: H. JOB IMPROVEMENT

TASK: 2. Develop Ideas for Job Improvement

Performance Objective: Given materials listed below, develop ideas for job improvement.

Standard: Develop methods of completing jobs that will improve working conditions, and also save time, money and labor.

Materials Needed: Job Descriptions, Job Evaluations, Employee Evaluation Forms, Job Research Results, Other Company Job Evaluations, Workshops, and College or other Technical Schools.

Enabling Objectives: Know how to perform each job that may need improvement.
Be able to distinguish problem areas.

Performance Guide:

1. Review job description
2. Review job evaluation forms
   A. Look for areas where "needing improvement" was noted
   B. Look for any recommendations that might have been made
3. Ask employees to fill out Job Evaluation Forms
   A. Ask for problems they have encountered
   B. Ask for their recommendation
4. Utilize and Employee Suggestion Box
5. Have regular employee meetings to discuss problems and solutions
6. Read books, magazines, etc. that may contain job improvement ideas
7. If available, attain methods that work for other companies
8. Attend workshops dealing with job improvements
9. Attend college or other technical schools where courses might be offered dealing with job improvement
10. Compile the information gained from all sources into a report
11. File a copy of the report
12. Submit a copy of the report to the company supervisor
13. Place improvement methods into effect
14. Monitor progress and make adjustments as needed
DUTY:  H. JOB IMPROVEMENT

TASK:  3. Provide Continuing Education

Performance Objective: Given the materials listed below, provide continuing education.

Standard: Provide methods which allow employees to gain training, which will improve job performance and/or give opportunity for promotion.

Materials Needed: Employees Desiring Training, Employees Evaluations, Employee Questionnaires, Job Evaluations, Instructors, Facilities, Text Materials, Tools or Equipment used for Various Jobs, Local Educational Institutions, and Certificates.

Enabling Objectives: Know job descriptions.
Know performance of all jobs.
Know areas where additional training may be needed.

Performance Guide:

1. Review all job descriptions
2. Review job evaluations
   A. Know how to perform all jobs
   B. Note areas where additional training may be needed
3. Review all employee evaluations to determine areas where training may be needed
4. Allow employees to fill out questionnaires on what training they would like to receive
5. Use information gained in steps 1-4 to determine the training that is needed
6. Set up classes that will provide the needed training
   A. Workshops may be set up, using the company facilities and bringing in an instructor, or
   B. Contract with an educational institution to provide training
7. Recognize the employees that attend and complete training
   A. Award program
   B. Award certificates
   C. Bonuses
   D. Other incentives
DUTY: H. JOB IMPROVEMENT

TASK: 4. Emphasize Safe Practices

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Performance Objective: Given materials listed below, emphasize safe practices.

Standard: Identify and emphasize safe practices for all areas of forestry.


Enabling Objectives: Know Safe Procedures for use of all Equipment.

Performance Guide:
1. Review all Safety Rules and Procedures
2. Give Copies of all Safety Rules and Procedures to the Employees
3. Require all Employees to Obtain and use Safety Equipment Such as, Safety Glasses, Ear Plugs, etc.
4. Conduct Safety Workshop
5. Hold Monthly safety Meetings
6. Provide Incentives for Maintaining a Good Safety Record
DUTY: I. ENVIRONMENTAL IMPACT MANAGEMENT

TASK: 1. Carry Out Wildlife Management Plan

Performance Objective: Given materials listed below, carry out wildlife management plan.

Standard: Perform duties and jobs which will provide the most optimum conditions for wildlife.


Enabling Objectives: Know how to obtain and use research material.
Know how to operate computer and use available software.
Know basic needs of wildlife.

Performance Guide:

1. Review the basic needs of wildlife in a particular area
2. Develop Wildlife Management Plan
   A. Utilize Wildlife Research
   B. Utilize other existing management plans
   C. Utilize computer models
   D. Utilize database Management System
3. Place Wildlife Management Plan into Operation
   A. Utilize capital for expenses included in plan
   B. Utilize personnel for construction or clean-up of habitat area
4. Monitor the Management Plan and make adjustments as needed
DUTY: 1. ENVIRONMENTAL IMPACT MANAGEMENT

TASK: 2. Comply With Best Management Practices

Performance Objective: Given materials listed below, comply with Best Management Practices.


Enabling Objectives: Know good management practices.
Know how to develop a good management plan.

Performance Guide:

1. Perform field observations to determine what management practices are needed
2. Develop management practices that are needed
   A. Use field observation
   B. Use field studies and research
   C. Use other management practices plans
3. Place management practices into use
4. Monitor management practices and make adjustments as needed
DUTY: I. ENVIRONMENTAL IMPACT MANAGEMENT

TASK: 3. Maintain Environmental Records

Performance Objective: Given materials listed below, Maintain Environmental Records.

Standard: The procedure must present the most accurate information on the effect of forestry on the environment.


Enabling Objectives: Know how to operate computer and use database management system. Know how to perform field studies and record information.

Performance Guide:

1. Conduct regular field studies on the effects of forestry, on the area environment
   A. Note erosion problems
   B. Note the death or absence of native wildlife
   C. Note ground water pollution
   D. Note any other problems that affect the natural environment
2. Enter the information gained from field studies into a database management system
3. Prepare environmental reports, using the database
4. File copies of the environmental report
5. Update the information regularly of as conditions change
DUTY:  J. PUBLIC RELATIONS

TASK:   1. Communicate Positive Image

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Performance Objective:  Given materials listed below, communicate a positive image to the public.

STANDARD:  A positive professional image is always displayed to the public.

Materials Needed:  Desirable Personality, Tact, Professional Knowledge, Communication Skills.

Enabling Objectives:  Ability to present yourself in a positive way.

Performance Guide:

1. Ask the land owner to tell you a brief history of their timber treatments, and previous timber experiences
2. Discuss some of the pitfalls of timber dealings
3. Relate to land owner how you would avoid those pitfalls, Emphasize importance of use of experienced professional foresters in avoiding problems
4. Ask the land owner to discuss objectives and future plans for his tract of timber
5. Discuss management options available and income producing potential (present timber material)
DUTY: J. PUBLIC RELATIONS

TASK: 2. Accomplish Quick, Positive Solution to Problems

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Performance Objective: Given materials listed below, always accomplish quick, positive solutions to problems.

Standard: The public is given quick, positive solutions to problems that might arise.


Enabling Objectives: Have ability to recognize what the problems are how to apply technical knowledge and experience to acknowledge problems.

Performance Guide:

1. Recognize problem
2. Define problem
3. Apply various known techniques to problems
4. Implement best technique for quick, positive solution
DUTY: J. PUBLIC RELATIONS

TASK: 3. Provide Public Information

Performance Objective: Given materials listed below provide the public with information.

Standard: All persons will be provided with needed information concerning any timber transactions or activities.


Enabling Objectives: Cultivate contacts within the public and media, provide needed public information seek recognition from professional peers.

Performance Guide:

1. Be able to speak at public meetings
2. Be capable of carrying on intelligent communication in a one on one situation
3. Be capable of speaking at elementary and secondary school programs
DUTY: K. CONTROLLED BURNING

TASK: 1. Develop a Burning Plan

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Performance Objective: Given materials listed below, develop burning plan.

Standard: Plan must be precise in that all needed information is gathered to safely and correctly carry out control burn.

Materials Needed: Aerial Photos, Field Maps.

Enabling Objectives: Know basic steps involved in control burn.

Performance Guide:

1. Secure written request from landowner
2. Secure liability release from landowner
3. Determine type burn needed
4. Develop burning plan
**DUTY:** K. CONTROLLED BURNING

**TASK: 2. Establish Fire Lines**

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**Performance Objective:** Given materials listed below, establish fire lines.

**Standard:** Lines must be established to prevent fire escaping to areas not to be burned.

**Materials Needed:** Aerial Photos, Field Maps Showing Location of Lanes to Establish, Burning Plan.

**Enabling Objectives:** Know how to operate and maintain tractor and plow.
Know how to read map and determine location of field and lanes to establish.

**Performance Guide:**

1. Identify area to be burned
2. Check and service equipment before using
3. Establish fire lines according to plan
4. Clean, check and service equipment
5. Return equipment to storage area
Duty: K. Controlled Burning

Task: 3. Organize the Burn

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Performance Objective: Given materials listed below, organize the burn.

Standard: Burn must be organized, using data, so that all parties know their respective duties.

Materials Needed: Aerial Photos, Field Maps Showing Location of Lanes to Establish, Burning Plan, Weather Data, Fuel on Site Conditions.

Enabling Objectives: Know the degree of burn needed to destroy fuel on site.
Be familiar with site conditions—both area to be burned and surrounding area.
Know weather data ranges required for burn.
Know hazards in adjacent property and possible smoke problems.

Performance Guide:

1. Identify area to be burned
2. Prepare field maps for all parties involved
3. Make all personnel aware of respective duties and responsibilities
4. List and secure equipment needed
5. Check needed weather data, site conditions, entry and exit points to site, beginning and ending point
DUTY:  K. CONTROLLED BURNING

TASK:  4. Execute Site Preparation Burn

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Performance Objective: Given materials listed below, execute the site preparation burn.

Standard: Fuel on site must be burned to enable regeneration or re-establishment of stand by other means.


Enabling Objectives: Know how to operate tractor and equipment.
                    Know how to interpret weather data.
                    Know how to operate radios.
                    Know degree of burn needed.

Performance Guide:
1. Identify area to be burned
2. Check fire lines
3. Check and service all equipment
4. Check pertinent weather data and fuel on site condition
5. Notify headquarters and local fire control people
6. Conduct and evaluate test burn
7. Deploy personnel and execute site prep burn
DUTY: K. CONTROLLED BURNING

TASK: 5. Execute Prescribed Burn

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Performance Objective: Given materials listed below, execute prescribed burn.

Standard: Burn must be accomplished with minimum of damage to existing pine stand. Burn must control undesirable species and remove wild fire hazard by burning existing fuel on site.


Enabling Objectives: Know how to operate tractor and equipment. Know how to interpret weather data. Know how to operate radios. Know degree of burn needed.

Performance Guide:

1. Identify area to be burned
2. Check fire lines
3. Check and service all equipment
4. Check pertinent weather data and fuel
5. Notify headquarters and local fire control people
6. Conduct and evaluate test burn
7. Deploy personnel and execute prescribed burn
DUTY: L. SITE PREPARATION

TASK: 1. Determine Planting Method

Performance Objective: Given materials listed below, determine planting method.

Standard: Based on site situation, environmental concerns and land owners objective, determine planting method.

Materials Needed: Aerial Photos, Field Maps showing location of lanes to establish, burning plan, soil sampling equipment, soil survey.

Enabling Objectives: Know environmental hazards involved with different planting methods. Know advantages and disadvantages of different planting methods. Know soil type to determine equipment limitations.

Performance Guide:

1. Identify area to be planted, and check for possible erosion hazards, equipment limitations
2. Check site for brush, timber cutting residue or existing trees
3. Check site to determine soil type
4. Make determination as to planting method
DUTY:  L. SITE PREPARATION

TASK:  2. Apply Mechanical Method of Site Preparation

Performance Objective: Given materials listed below, apply mechanical method of site preparation.

Standard: Site must be prepared mechanically to enable regeneration by planting (hand or mechanical).

Materials Needed: Aerial Photos, Field Maps Showing Location of Lanes, Equipment Needed for Particular Kind of Site Preparation.

Enabling Objectives: Know how to operate and maintain equipment designed for particular kind of site preparation.
Know environmental hazards.

Performance Guide:

1. Identify area to be site prepped on field map
2. Check and service all equipment
3. Check site for possible hazards
4. Execute type of mechanical site preparation selected such as drum chopping, clearing with V blade, stacking and burning
DUTY: L. SITE PREPARATION

TASK: 3. Apply Chemical Method of Site Preparation

Performance Objective: Given materials listed below, apply chemical method of site preparation.

Standard: Site must be prepared chemically to enable regeneration.

Materials Needed: Aerial Photos, Field Maps Showing Location of Lanes, Equipment Needed for Particular Kind of Application, Chemicals, License for Application.

Enabling Objectives: Know how to operate and maintain equipment designed for particular kind of site preparation.
Know environmental hazards.
Know chemicals recommended for particular application.
Know applicable laws governing use of recommended herbicides.

Performance Guide:

1. Identify area to be site prepped on field map
2. Check and service all equipment
3. Check site for possible hazards
4. Check wind velocity and direction
5. Check possible sites in surrounding area that might receive damage from chemicals
6. Notify if applicable, proper county and or state officials and surrounding land owners and of residents
7. Prepare and apply chemicals
DUTY:  L. SITE PREPARATION

TASK:  4. Inspect Final Site Preparation

Performance Objective: Given Materials listed Below, perform final site preparation inspection.

Standard: Inspection must include effectiveness of site preparation based on type of site prep.

Materials Needed: Aerial Photos, Field Maps, Contract or Other Standard for Site Prep.

Enabling Objectives: Know how to evaluate effectiveness of site prep method.

Performance Guide:
1. Identify area on field map
2. Check area prepared for degree of preparedness based on contract or other standard
3. Prepare inspection report
DUTY: M. REGENERATION

TASK: 1. Distribute Seedlings

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Performance Objective: Given the materials listed below, distribute seedlings.

Standard: Seedlings must be distributed in a manner to assure protection from the elements and to assure that planting crews have sufficient seedlings.


Enabling Objectives: Know planting crew assignments, fields and acreages, and daily planting capabilities. Know how to protect seedlings from the elements.

Performance Guide:

1. Identify the areas that crews are working on a field map
2. Secure the seedlings
3. Protect the seedlings from the elements before and during transport
4. Distribute the seedlings to the planting crews
DUTY: M. REGENERATION

TASK: 2. Monitor the Contractor's Work

Performance Objective: Given the materials listed below, monitor the contractor's work.

Standard: Contractor's work will be monitored to assure that seedlings are protected before and during planting and that seedlings are planted according to specifications and contracts.


Enabling Objectives: Know planting crew assignments. Know how to protect seedlings from the elements. Know the current planting procedures as listed in the contract and/or planting specifications.

Performance Guide:

1. Identify where the crews are working on the field map
2. Check the seedlings for proper protection on the planting site
3. Spot check the seedlings as they are being planted and after they have been planted
4. Monitor planting crews at different times daily
**DUTY:** M. REGENERATION

**TASK:** 3. Perform Final Inspection

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**Performance Objective:** Given the materials listed below, perform the final inspection.

**Standard:** Trees must be planted according to the contract and/or specifications.

**Materials Needed:** Aerial Photographs, Field Maps, Contract and/or Planting Specifications, Compass, Plotting Equipment, Shovel.

**Enabling Objectives:** Know the current planting procedure as listed in the contract or planting specifications.
Know proper inspection procedures.

**Performance Guide:**

1. Identify the area on a field map
2. Establish permanent inspection plots
3. Check for proper planting according to contract and/or planting procedures
4. Check and count seedlings planted correctly at each check point
5. Determine the seedling count (those planted correctly) on a per acre basis
6. Prepare an inspection report
DUTY: M. REGENERATION

TASK: 4. Perform One Year Survival Check

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Performance Objective: Given the materials listed below, perform a one year survival check.

Standard: Fields must be checked at approximately one year from planting to determine the number of seedlings that have survived.

Materials Needed: Aerial Photographs, Field Maps Showing the Location of Permanent Inspection Plots Established at Planting Time and Information Gathered at Planting, Calculator, Inspection Sheets.

Enabling Objectives: Know survival rate required. Know simple math.

Performance Guide:

1. Identify the area on the field map
2. Using maps showing the check points established at the time of planting, re-check each plot and count the live trees
3. Using information compiled at planting time at each check point, determine the survival rate
4. After all check points have been checked, determine the survival rate by number on a per acre basis
5. Prepare a survival report
DUTY:  N. RECORD MANAGEMENT

    TASK:  1. Use Polycorder

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Performance Objective:  Given materials listed below and a polycorder, learn to use a polycorder.

Standard:  The polycorder will be used accurately.

Materials Needed:  Polycorder

Enabling Objectives:  Know how to use a polycorder.

Performance Guide:

1. Learn necessary procedure for using polycorder
2. Learn how to protect and maintain polycorder
3. Tally timber according to established procedures
4. Unload data onto mainframe computer and print
**DUTY:** N. RECORD MANAGEMENT

**TASK:** 2. Use Personal Computer for Word Processing

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**Performance Objective:** Given the materials listed below, use the personal computer for word processing.

**Standard:** The personal computer will be used for word processing with 90 percent accuracy.

**Materials Needed:** Personal Computer, Report or Letter to be Processed, Printer.

**Enabling Objectives:** Know how to boot up computer and load word processing program.

**Performance Guide:**

1. Review instructions for preparing the letter or report
2. Turn on, program, and insert appropriate disk into the word processing unit
3. Provide index/reference information on disk
4. Check/adjust set-up of word processing unit to provide desired margins, pitch, and spacing for display and print of the completed report/letter
5. Keyboard the report/letter in continuous typing mode
6. Insert figures and tables (if needed)
7. Merge text (if needed)
8. Paginate report/letter
9. Proofread and correct
10. Print the report
DUTY: N. RECORD MANAGEMENT

TASK: 3. Use Personal Computer for Data Base Management

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Performance Objective: Given the materials listed below, use a personal computer for data base management.

Standard: The personal computer will be used for data base management with 90 percent accuracy.


Enabling Objectives: Knowledge of computers, and basic communication skills.

Performance Guide:

1. Develop an outline describing the agribusiness information system in the areas of:
   a. financial accounting
   b. production records
   c. marketing
   d. financial planning
2. List the jobs the computer will be used for
3. Develop a detailed job description for each application in keeping business records and reports
4. Review data base management software computer programs for records and reports which are useful
5. Select software that best matches the computer system to the business needs
DUTY: N. RECORD MANAGEMENT

TASK: 4. Use Personal Computer with Spreadsheet

Performance Objective: Given materials listed below, use a personal computer with a spreadsheet.

Standard: The personal computer will be used for spreadsheet applications with 90 percent accuracy.


Enabling Objectives: Knowledge of computers, and basic communication skills.

Performance Guide:

1. Develop an outline describing the agribusiness information system in the areas of:
   a. financial accounting
   b. production records
   c. marketing
   d. financial planning
2. List the jobs the computer will be used for
3. Develop a detailed job description for each application in keeping business records and reports
4. Review spreadsheet software computer programs for records and reports which are useful
5. Select software that best matches the computer system to the business needs
DUTY: N. RECORD MANAGEMENT

TASK: 5. Maintain All Company Records

Performance Objective: Given materials listed below, and all company records, maintain company records.

Standard: All company records will be maintained neatly and accurately.

Materials Needed: Various Business Records, Pen or Pencil, Computer.

Enabling Objectives: Know how to operate computer. Know how to read and interpret various business records.

Performance Guide:

1. Compile and organize business records used by the agribusiness
2. Review each record to identify needed information and purpose
3. Complete each business record as required
4. File business forms as required
5. If computerized, record information in appropriate file and save on hard or floppy disk, back up as necessary
DUTY: N. RECORD MANAGEMENT

TASK: 6. Maintain Client Records

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Performance Objective: Given the materials listed below, maintain client records.

Standard: All client records will be maintained neatly and accurately.

Materials Needed: Various Client Records, Pen or Pencil, Computer.

Enabling Objectives: Know how to operate computer.
Know how to read and interpret various business records of your client.

Performance Guide:

1. Establish records of transactions made with each individual client
2. Record timber sales, dates of transactions, locations that were marketed
3. File aerial photographs, topographic maps that could be used for future reference
4. File a long term plan for your clients timber management
5. Keep in touch with client as to what steps in the plan need to be implemented and work within a time frame
6. Being knowledge of your clients timber management needs is a must
DUTY:  N. RECORD MANAGEMENT

TASK:  7. Maintain a Daily Log

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Performance Objective:  Given materials listed below, maintain a
daily log book.

Standard:  Properly maintain a daily log book.

Materials Needed:  Pen or Pencil, Daily Log Book.

Enabling Objectives:  Know how to record in your daily log book
the information that can be recalled at a later date.

Performance Guide:

1. Record information pertinent to your days activities which
   should include such things as:
   a. tract of timber being worked
   b. cruising information
   c. record current market prices
   d. record marketing alternative strategies
   e. record any insect or disease problems encountered

2. Solicit business from new clientele
DUTY: N. RECORD MANAGEMENT

TASK: 8. Use Calculator

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Performance Objective: Given the materials listed below, use a calculator effectively.

Standard: The calculator will be used to accomplish necessary mathematical transactions with 100% accuracy.

Materials Needed: Calculator, Mathematical Information to be Computed.

Enabling Objectives: Know how to properly operate a calculator.

Performance Guide:

1. Obtain the calculator needed for the job to be performed
2. Read the instructions relating to all functions of your calculator
3. Insert proper data to be calculated
4. Record calculations in the proper place
DUTY: OPERATE AND MAINTAIN EQUIPMENT

TASK: Operate and Maintain Light Dozer

Performance Objective: Given materials listed below, operate and maintain a light dozer.

Standard: Operate and maintain light dozer according to agency guidelines.


Enabling Objectives: Have a knowledge of operating a light dozer.

Performance Guide:
1. Follow daily maintenance procedures
2. Perform maintenance as needed before operating
3. Make adjustments to dozer as necessary
4. Operate dozer to perform job. (establishing fire lanes, fire control, site preparation for tree planting, control burns)
5. Perform any necessary maintenance while operating dozer
6. Use proper safety precautions
DUTY: O. OPERATE AND MAINTAIN EQUIPMENT

TASK: 2. Operate and Maintain Transport Truck (Roll Back)

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Performance Objective: Given the materials listed below, operate and maintain transport truck.

Standard: Operating and maintaining a transport truck will be done according to policy.


Enabling Objectives: Have a knowledge of operating a transport truck.
Be familiar with the operators manual.

Performance Guide:

1. Follow scheduled maintenance procedures for transport trucks
2. Perform maintenance as needed before operating
3. Proceed to operate transport truck according to state, agency and/or company rules and regulations
4. Operate truck to transport equipment or vehicles as needed:
   A. Job sites
   B. Repair shops
5. Perform any necessary maintenance while operating transport truck
DUTY: O. OPERATE AND MAINTAIN EQUIPMENT

TASK: 3. Operate and Maintain Chain Saw

Performance Objective: Given materials listed below operate and maintain a chain saw.

Standard: Chain saws will be operated and maintained according to instruction manual procedures.


Enabling Objectives: Have knowledge of the operation of a chain saw.

Performance Guide:

1. Be familiar with operating instruction manual procedures
2. Check adjustments, chain, fuel, oil levels before operating
3. Make adjustments and add fuel and oil (if necessary)
4. Proceed to operate the chain saw following operators manual procedures
5. Maintain chain saw following operators manual procedures
6. Use proper safety precautions
DUTY: OPERATE AND MAINTAIN EQUIPMENT

TASK: Operate and Maintain Marking Equipment

Performance Objective: Given materials listed below, operate and maintain marking equipment.

Standard: All marking equipment will be operated and maintained according to instruction manual procedures.


Enabling Objectives: Have a knowledge of harvesting techniques.

Performance Guide:

1. Become familiar with operating manual procedures of marking equipment
2. Perform maintenance as needed before operating
3. Make adjustments to marking equipment as needed
4. Operate marking equipment to perform tasks
5. Perform necessary maintenance to marking equipment after using
6. Use proper safety precautions
DUTY:  O. OPERATE AND MAINTAIN EQUIPMENT

TASK:  5. Operate and Maintain Company Vehicles

Performance Objective: Given materials listed below, operate and maintain company vehicles.

Standard: Company vehicles will be operated and maintained according to company policy.


Enabling Objectives: Be able to operate half-ton to one-ton vehicles.

Performance Guide:

1. Become familiar with operator’s manual procedures
2. Follow the scheduled maintenance procedures for the vehicle.
3. Perform maintenance as needed before operating
4. Proceed to operate according to state, agency, and/or company rules and regulations
5. Perform job tasks such as checking planting sites, location of wild and controlled fires, infestations of insects and diseases, etc.
6. Perform any necessary maintenance while operating company vehicles
7. Use proper safety precautions
DUTY: OPERATE AND MAINTAIN EQUIPMENT

 TASK: 6. Operate and Maintain All Terrain Vehicles

******************************************************************************
Performance Objective: Given materials listed below, operate and maintain all terrain vehicles.

Standard: ATV's will be operated and maintained according to instruction manual procedures.


Enabling Objectives: Have a knowledge of the operation of an ATV.

Performance Guide:
1. Become familiar with operator's manual procedures
2. Follow the scheduled maintenance procedures for the vehicle.
3. Perform maintenance as needed before operating
4. Perform job tasks such as checking planting sites, location of wild and controlled fires, infestations of insects and diseases, etc.
5. Perform any necessary maintenance while operating company vehicles
6. Use proper safety precautions
V. RECOMMENDED SECONDARY AND POSTSECONDARY COURSE OPTIONS FLOWCHARTS

The following flowcharts show the possible courses and routes that a student may take in pursuing a particular 2+2 articulated program.

These charts are examples to be used by other secondary and postsecondary institutions in establishing their own 2+2 agricultural programs.
Agriculture 2 + 2
Natural Resource/Forestry Option

Freshman (9th)
- Ag. Sci 101: Introduction to World Agricultural Science and Technology
- Ag. Sci 102: Applied Agricultural Science and Technology

Sophomore (10th)
- Ag. Sc. 231: Animal and Plant Production
- Ag. Sc. 281: Energy and Environmental Technology

Junior (11th)
- Ag. Sc. 311: Agribusiness Management & Marketing
- Ag. Sc. 312: Personal Skill Development in Agriculture

Senior (12th)
- Ag. Sc. 333: Plant and Soil Science
- Ag. Sc. 365: Forest and Wood Technology
- Ag. Sc. 381: Wildlife and Recreation Management
- Ag. Sc. 491: Agricultural Resources Pre-Employment Laboratory

OR
- Ag. Sc. 333: Plant and Soil Science
- Ag. Sc. 365: Forest and Wood Technology
- Ag. Sc. 491: Forest and Wood Technology (Full Year Course)
- Ag. Sc. 491: Forestry Pre-Employment Laboratory (Full Year Course)

Recommended Prerequisites
- Ag. Sc. 333
- Ag. Sc. 333
- Ag. Sc. 381
- Ag. Sc. 491

Plant and Soil Science
Wildlife and Recreation Management
Forest and Wood Technology
Agricultural Resources Pre-Employment Laboratory
- Pre-Employment Laboratory

OR
- Ag. Sc. 381: Wildlife and Recreation Management
- Ag. Sc. 365: Forest and Wood Technology
- Ag. Sc. 491: Agricultural Resources Pre-Employment Laboratory (Full Year Course)
- Ag. Sc. 491: Forestry Pre-Employment Laboratory (Full Year Course)

Community College (Junior) Enter Workforce
Agriculture 2 + 2
Natural Resources/Forestry Option
Continued

Community (Junior) College

Assessment and Counseling

Certificate Program

Agriculture 2 + 2 Option Certificate of Completion Diploma

Enter Workforce

Agriculture 2 + 2 Option Applied Degree

Senior College Baccalaureate Degree
Secondary:

The following secondary plans include both the academic and agricultural recommendations for a student who is interested in pursuing an articulated 2+2 agricultural program. Included are the recommended courses beginning with the freshman year and continuing through grade 12. Students on the regular, advanced, or honors tract may follow this plan; however, students on the regular tract must take some higher math and science courses than may be recommended otherwise.

These plans are based upon a seven period day and the only difference in the three is in the area of Physical Education since choosing one of these three options may affect the courses you would have time to take.

Postsecondary:

These postsecondary plans include both the academic and agricultural course recommendations for the Certificate of Completion Diploma or the applied degree for a student who is interested in the 2+2 agricultural program.
## ARTICULATED CURRICULA FOR AGRISCIENCE TECHNOLOGY
Daingerfield High School Forest Technology Option

<table>
<thead>
<tr>
<th>SUBJECT</th>
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<th>SENIOR</th>
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</table>

1. Students enrolled in the honors program would need to take at least 5 of these courses
2. Computer course can be selected from the following:
   - Computer Math
   - Business Information Processing
3. Fine Arts Elective can be selected from the following:
   - 1 credit required for honors and advanced
   - Theatre Arts
   - Introductory Speech
   - Music History & Literature
   - Band I-IV (Fall counts for P.E. credit, Spring counts as Fine Arts credit)
4. Recommended Electives can be selected from the following:
   - Journalism
   - Advanced Journalism
   - Spanish I (Students in honors need to take these courses but regular students may also)
   - Personal Business Management
   - Typing I
   - Record Keeping
   - Accounting
   - Advanced Accounting
   - Introduction to Computer Programming
   - Psychology
   - Sociology
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   Journalism
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   Typing I
   Record Keeping
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   Advanced Accounting
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   Psychology
   Sociology
## ARTICULATED CURRICULA FOR AGRISCIENCE TECHNOLOGY

**Daingerfield High School Forest Technology Option**

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<td>Computer Elective *2</td>
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### Notes:

1. Students enrolled in the honors program would need to take at least 5 of these courses.
2. Computer course can be selected from the following: Computer Math, Business Information Processing.
3. Fine Arts Elective can be selected from the following: (1 credit required for honors and advanced)
   - Theatre Arts
   - Introductory Speech
   - Music History & Literature
   - Band I-IV (Fall counts for P.E. credit, Spring counts as Fine Arts credit)
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   - Spanish I (Students in honors need to take these courses but regular students may also)
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   - Advanced Accounting
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## POSTSECONDARY

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<td>84 hrs.</td>
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**Basics**

- ENG 314 - Business English I
- ENG 315 - Business English II
- SPE 341 - Business and Professional Speaking
- MTH 301 - College Algebra
- MTH 302 - Plane Trigonometry
- MTH 343 - Introduction to Statistics
- PSC 400 - Physical Science
- BIO 401 - Botany
- CHM 402 - Introductory Chemistry I
- GOV 341 - American Government: State and Local
- ECO 341 - Principles of Microeconomics
- PSY 303 - General Psychology
- CIS 303 - Application Software I
- Electives - 6 hours

**Forestry Block Courses**

- Introduction to Forestry
- Silviculture I
- Dendrology
- Forest Math
- Forest Communications
- Forest Drafting
- Forest Office Machines
- Forest Protection
- Forest Surveying
- Forest Mapping
- Silviculture II
- Forest Harvesting
- Forest Measurements
- Forest Business Methods
- Forest Products
- Forest Personnel Management/Safety
- Elements of Wildlife Ecology
This section includes the basic course outlines for the agriscience courses to be taught at the secondary level and the course outlines for the postsecondary level agriculture courses.

Although this is a 2+2 articulated curriculum, the basic course outlines for the recommended agriculture prerequisites are also included here.
SECONDARY COURSE OUTLINES
Agriscience 101 - Introduction to World Agricultural Science and Technology

A. Recognize the Importance of Agriculture in the World
   1. Understand Supply and Demand of Food and Fiber
   2. Identify the Availability of Renewable and Nonrenewable Agricultural Resources
   3. Understand the Impact of Agriculture on the World Economy
   4. Describe the Interdependency of Agriculture and Other Segments of Society

B. Explain the Historical Significance of Agriculture
   1. Identify Key Developments Shaping Modern Agriculture in the World
   2. Identify Key Developments Shaping Modern Agriculture in the United States

C. Recognize the Interdependency of Agriculture and World Politics
   1. Identify Factors Affecting World Trade
   2. Recognize the Impact of Agriculture as a Political Tool

D. Recognize the Interdependency of Agriculture and the Environment
   1. Identify Environmental Concerns in Agriculture
   2. List Methods of Protecting the Environment
   3. Recognize the Impact of the Environment on Agriculture

E. Explain the Food and Fiber System
   1. Explain the Food Chain - from Production to Consumption
   2. Explain the Fiber Chain - from Production to Usage

F. Identify Research and Development in Agriculture
   1. Understand the Impact of Research and Development and Identify Current Developments in Agricultural Science and Technology
   2. Apply Research and Development in the Classroom and Laboratory

G. Explore Career and Other Opportunities in Agriculture
   1. Conduct a Career Self-Analysis
   2. Recognize the Career Decision-Making Process
   3. Develop Job Seeking Skills
   4. Identify Full-Time Career Opportunities in Agriculture
   5. Identify Part-Time Career Opportunities in Agriculture
   6. Identify Avocational Opportunities in Agriculture
H. Develop Personal and Social Skills

1. Develop Professionalism and Ethics
2. Use Proper Etiquette and Behavior
3. Explore Personal Relations
4. Practice Good Grooming and Health Habits

I. Improve Communication Skills

1. Understand the Importance of Effective Communication: Speaking
2. Understand the Importance of Effective Communication: Writing
3. Improve Communication Skills Through Organized Activities
4. Utilize the Media for Effective Communication

J. Develop Leadership Skills in Agricultural Science and Technology Through the FFA

1. Develop Life Skills for Effective Leadership
2. Explore Opportunities for Leadership Development Through the FFA
3. Use Democratic Principles in Conducting Effective Meetings
4. Understand the FFA Organization

K. Examine Personal Financial Management

1. Discuss the Importance and Procedures of Keeping Accurate Records
2. Describe the Importance and Use of Budgeting
3. Describe the Importance and Procedures of Personal Finance

L. Analyze Agricultural Experience Programs

1. Identify Various Types of Supervised Agricultural Experience Programs
2. Describe the Characteristics of Successful Supervised Agricultural Experience Programs
3. Select and Plan Individual Supervised Agricultural Experience Programs
Agriscience 102 - Applied Agricultural Science and Technology

A. Identify Soil Formations
   1. Recognize the Importance and Formation of Soils
   2. Identify Soil Formations

B. Identify the Nature and Properties of Soils
   1. Identify Components and Properties of Soils
   2. Recognize Soil Classification Systems

C. Explain Basic Plant Science and Technology
   1. Describe Plant Structure and Functions of Plant Parts
   2. Discuss Plant Growth and Development: Seed Germination
   3. Discuss Plant Growth and Development: Production, Storage, and Use of Food in Plants
   4. Outline Plant Genetics
   5. Outline Plant Reproduction
   6. Discuss Plant Breeding
   7. Recognize Plants

D. Explain Basic Animal Science and Technology
   1. Explain Animal Growth and Development
   2. Describe the Anatomy and Physiology of Animals
   3. Identify Breeds and Classes of Livestock and Poultry of Economic Importance to the Community
   4. Discuss the Importance of Animal Selection
   5. Outline Animal Reproduction
   6. Outline Animal Genetics
   7. Discuss Animal Breeding

E. Determine Basic Food Science Technology
   1. Recognize the Importance of Food Science Technology in the World
   2. Determine Trends in World Food Production

F. Explore Agricultural Mechanics
   1. Identify Major Areas of Agricultural Mechanics
   2. Identify Safety and Laboratory Procedures
   3. Perform Basic Skills in Agricultural Construction - Tools
   4. Identify Lumber and Compute Bill of Materials
   5. Identify and Use Fasteners
G. Recognize the Protection of the Environment
   1. Determine the Effect of Agricultural Chemicals on the Environment
   2. Identify the Requirements for the Proper Use of Agricultural Chemicals
   3. Identify Methods of Protecting the Environment

H. Understand Energy and Water Conservation in Agriculture
   1. Determine Alternative Energy Sources for Agricultural Use
   2. Identify Methods of Conserving Electrical Energy and Combustible Fuels
   3. Explain Methods of Conserving Water

I. Explore Career and Other Opportunities in Applied Agricultural Science and Technology
   1. Conduct a Career Self-Analysis
   2. Identify Career Clusters in Agricultural Science and Technology

J. Understand Experience Programs in Agricultural Science and Technology
   1. Identify the Various Types of Supervised Agricultural Experience Programs
   2. Describe the Characteristics of Successful Supervised Agricultural Experience Programs
   3. Select and Plan Individual Supervised Agricultural Experience Programs

K. Plan and Conduct Leadership Activities in Applied Agricultural Science and Technology
   1. Develop Life Skills for Effective Leadership
   2. Practice Leadership Skills for Agricultural Science and Technology
A. Determine the Importance of Soil and Its Influence on Society
   1. Determine the Influence of Soil
   2. Explain the Formation of Soil

B. Identify the Chemical and Physical Properties of Soil
   1. Identify Soil Components
   2. Identify Soil Properties
   3. Recognize Soil Classification Systems
   4. Recognize Methods of Soil Sampling

C. Explain the Conservation of Soil for Future Generations
   1. Identify Kinds of Soil Erosion
   2. Explain the Factors Influencing Soil Erosion
   3. Discuss Soil Erosion Control Measures
   4. Examine the Fundamentals of Soil Use and Land Management

D. Explain the Conservation of Soil Water for Future Generations
   1. Explain the Importance and Loss of Soil Water
   2. Discuss Soil Water Drainage
   3. Identify Water Requirements of Crops
   4. Explain Soil Water Conservation Measures

E. Recognize Methods for Improving Soil Fertility for Agriculture and Home Use
   1. Identify Soil Nutrients
   2. Recognize Uses and Types of Fertilizer
   3. Explain the Importance of Organic Matter
   4. Recognize Soil Deficiencies
   5. Identify Secondary Nutrients, Micronutrients, and Soil pH

F. Determine the Importance of Plants and Their Influence on Society
   1. Determine the Economic Importance of Major Crops
   2. Locate Major Areas of Crop Production in the State, Nation, and World
   3. Identify Major Crops and Their Uses

G. Describe Plant Anatomy and Physiology
   1. Identify Basic Structures and Functions of Plant Parts
   2. Explain Seed Germination in Plants
   3. Describe Photosynthesis, Storage, and Use of Food in Plants
H. Explain Plant Reproduction
   1. Explain Sexual Reproduction of Plants
   2. Explain Asexual Reproduction of Plants

I. Recognize Plant Nutrient Requirements
   1. Recognize Nutrient Requirements of Plants
   2. Identify Organic and Inorganic Fertilizers - Types, Sources, and Blends
   3. Discuss Methods, Rates, and Timing of Fertilizer Applications and Fertilizer Regulations

J. Select Fundamental Plant Management Techniques
   1. Select Mechanical Techniques of Plant Management
   2. Select Chemical Techniques of Plant Management

K. Determine the Importance of Animals and Their Influence on Society
   1. Examine Classes, Grades, and Numbers of Livestock in the State, Nation, and World
   2. Determine Trends in Production and Consumption of Animal Products

L. Evaluate and Select Livestock, Poultry, and Rabbits Based on Performance, Visual Appraisal, and Pedigree
   1. Evaluate and Select Beef Cattle
   2. Evaluate and Select Dairy Cattle
   3. Evaluate and Select Swine
   4. Evaluate and Select Horses
   5. Evaluate and Select Sheep
   6. Evaluate and Select Goats
   7. Evaluate and Select Poultry
   8. Evaluate and Select Rabbits

M. Evaluate Livestock and Poultry Carcasses and Identify Wholesale and Retail Cuts
   1. Evaluate Livestock Carcasses and Identify Wholesale and Retail Cuts
   2. Evaluate Poultry Carcasses and Identify Wholesale and Retail Cuts
N. Select Fundamental Animal Management Techniques

1. Select Methods of Safe Handling and Restraining of Domestic Animals
2. Select Methods of Performing Common Surgical and Immunization Skills Used with Domestic Animals
3. Select Methods of Identifying Domestic Animals for Ownership
4. Select Methods of Transporting Domestic Animals

O. Describe the Anatomy and Physiology of Domestic Animals

1. Describe Circulatory Systems of Domestic Animals
2. Describe Respiratory Systems of Domestic Animals
3. Describe Skeletal Systems of Domestic Animals
4. Describe Muscular Systems of Domestic Animals
5. Describe Digestive Systems of Domestic Animals
6. Describe Reproductive Systems of Domestic Animals

P. Recognize Animal Nutrient Requirements

1. Identify Feed Nutrients for Animal
2. Identify Classes of Animal Feeds
3. Identify Feed Additives for Animal Feeds

Q. Manage Records of Soil, Plant, and Animal Related Enterprises

1. Maintain Records of Soil, Plant, and Animal Related Enterprises
2. Analyze Records of Soil, Plant, and Animal Related Enterprises

R. Plan and Conduct Leadership Activities Related to Animal and Plant Production

1. Develop Leadership Skills Related to Animal and Plant Production
2. Participate in Leadership Skills Related to Animal and Plant Production

S. Explore Career Opportunities in Animal and Plant Production

1. Identify Careers in Plant and Soil Science
2. Identify Careers in Animal Science
A. Determine the Importance and Scope of Natural Resources, Energy and the Environment

1. Identify Various Types of Natural Resources
2. Determine the Economic Impact of Natural Resources on the Agricultural Economy
3. Determine the Geographical Distribution of Natural Resources

B. Evaluate Conservation and Environmental Policies

1. Analyze Historical Factors Affecting Natural Resources
2. Assess Ecological Controls of Natural Resources
3. Review Society's Role in Natural Resource Policy
4. Review Government's Role in Natural Resource Policy

C. Analyze Populations Demographics in Resource Management

1. Compare Supply to Demand for Natural Resources
2. Analyze the Growth and Change of World, Nation, and State Population and Its Effect on Natural Resources
3. Discuss Resource Allocation

D. Recognize the Importance of Land Use Planning

1. Identify Principles of Land Use
2. Manage Land for Natural Resource Conservation in Rural and Urban Settings
3. Examine Land Use Policy Trends

E. Understand Water Resource Management

1. Apply Hydrology to Resource Management
2. Manage Surface and Groundwater Properly
3. Identify Water Needs of Society
4. Discuss the Planning and Distribution of Water in Texas
5. Review Legislation Concerning Water Use
6. Discuss Conservation of Quality Water for the Future
7. Describe Procedures for the Desalination of Salt Water
8. Understand Water Rights

F. Identify the Uses of Water in Urban Settings

1. Identify Uses of Water in Urban Areas
2. Discuss Home Water Conservation Techniques
3. Discuss the Impact of Land Use on Water Runoff
4. Examine the Processes Needed to Insure Water Quality
G. Identify the Uses of Water in Agricultural Settings

1. Identify the Uses of Water in Agricultural Settings
2. Identify Types of Irrigation
3. Discuss Water Conservation Methods Used in Irrigation
4. Identify Agencies Developed to Assist in Water Conservation
5. Illustrate the Use of Water by Animals
6. Recognize the Need to Insure Water Quality for Agriculture

H. Explain Waste Water Management

1. Identify Types of Waste
2. Discuss Techniques Used to Reclaim Waste Water
3. Discuss the Reclamation of Solid Waste
4. Understand the Management of Waste in an Agricultural Setting

I. Recognize the Use of Natural Resources for Energy

1. Identify Natural Resources Used for Energy
2. Identify Agricultural Products Used for Energy
3. Discuss the Use of Renewable Resources for Energy
4. Identify Non-renewable Resources Used for Energy
5. Understand Governmental Policies Affecting Energy

J. Describe Air Quality Improvement

1. Discuss Air Quality Standards
2. Review Agriculture Policies Concerning Air Quality
3. Identify Sources and Effects of Air Pollution
4. Identify Sources and Effects of Noise Pollution
5. Understand Air Pollution Control Programs

K. Determine Methods of Controlling Soil Erosion

1. Identify Sources and Types of Erosion
2. Understand Harmful Effects of Erosion
3. Understand Liability Involved in Erosion Control
4. Review Methods to Control Erosion
5. Understand Erosion Control Governmental Programs

L. Discuss the Identity, Handling, Storing, Disposal, and Safety of Hazardous Materials

1. Identify Hazardous Materials
2. Discuss Safe Handling Procedures for Hazardous Materials
3. Discuss Safe Storing Procedures for Hazardous Materials
4. Discuss Safe Disposal Procedures for Hazardous Materials
5. Understand Hazardous Materials Governmental Programs
M. Explore Career Opportunities in Energy and Environmental Technology

1. Explore and Identify Career Opportunities in Energy Related Areas
2. Explore and Identify Career Opportunities in Environmental Related Areas

N. Plan and Conduct Leadership Activities Related to Energy and Environmental Technology

1. Develop Leadership Skills Related to Energy and Environmental Technology
2. Participate in Leadership Activities Related to Energy and Environmental Technology

O. Manage Records Related to Energy

1. Maintain Records Related to Energy and Environmental Technology
2. Analyze Records Related to Energy and Environmental Technology
Agriscience 311 - Agribusiness Management
and Marketing

A. Examine Agribusiness Management and its Importance
   1. Recognize the Importance of Agriculture
   2. Describe the Role and Functions of the Manager
   3. Investigate the Process of Management Decision Making
   4. Discuss the Value of Setting Goals and Objectives

B. Identify Economic Principles Important to Agribusiness Management
   1. Discuss Free Enterprise and Economic Systems
   2. Examine Consumer Economics: Supply and Demand
   3. Examine Producer Economics: Maximizing Profits

C. Illustrate the Use of Budgeting in Decision Making
   1. Categorize Income and Cost of Production
   2. Examine the Construction and Analysis of Enterprise Budgets
   3. Discuss the Use of Whole Farm Budgeting for Planning
   4. Investigate the Use of Partial Budgeting to Analyze Proposed Business Changes

D. Analyze Recordkeeping Procedures
   1. List the Parts of a Management Information System
   2. Compare Accounting Methods
   3. Select an Accounting System
   5. Analyze the Financial Strength of the Business
   6. Review Tax Records and Returns
   7. Identify Important Production Records
   8. Evaluate Production Records

E. Discuss the Acquisition of Capital Resources
   1. Compare Methods of Obtaining Capital Resources
   2. Identify the Importance and Types of Credit
   3. Determine the Institutions that Provide Agricultural Loans
   4. Review Loan Application Forms
   5. Compare Methods of Computing Interest
   6. Compare Types of Loans

F. Explain Business Related Laws
   1. Compare Business Types
   2. Interpret Common Agricultural Laws
   3. Examine Important Government Regulations
   4. Review Common Legal Documents
G. Review Methods of Reducing Risk
   1. Identify Risk Management Techniques
   2. Identify Types of Insurance Available
   3. Discuss Sources of Insurance

H. Examine Government Policy Toward Agriculture
   1. Review Past Agricultural Policies
   2. Discuss Recent and Future Government Policies Toward Agriculture

I. Study the Marketing of Agricultural Products
   1. Discuss the Purpose and Importance of Marketing
   2. Discuss the Competitive Environment
   3. Discuss Factors that Influence Market Decisions: Foreign and Domestic
   4. Compare Types of Agricultural Markets
   5. Identify Marketing Alternatives for Production Agriculture
   6. Discuss Forward Contracting: Cash and Futures
   7. Review the Effects of Government Programs and Regulations

J. Examine the Application of Computers to Agribusiness Management
   1. Discuss Appropriate Uses for Computers
   2. Utilize Decision Aid Software
   3. Utilize Computerized Recordkeeping Systems
   4. Identify Guidelines for Selecting a Suitable Computer System

K. Describe the Management of Human Resources
   1. Analyze Employee Benefits
   2. Describe the Employer/Employee Relationship

L. Explore Career Opportunities in Agribusiness Management
Agriscience 312 - Personal Skill
Development in Agriculture

A. Discuss Personal Development

1. Develop a Positive Self Concept
2. Develop Social Skills
3. Project a Professional Image

B. Describe an Effective Leader

1. Determine the Traits of a Good Leader
2. Contrast Leadership Styles

C. Develop Leadership Ability

1. Realize Personal Leadership Potential
2. Understand Basic Human Needs
3. Motivating and Influence People
4. Prepare Resumes and Applications

D. Describe Employee Responsibilities

1. Prepare for Job Interviews
2. Describe Employer Expectations
3. Recognize the Importance of Work Related Ethics
4. Get Along with Co-Workers

E. Describe Employer Responsibilities

1. Evaluate Job Applicants
2. Evaluate Employee Performance
3. Develop an Effective Complaint and Appeals Procedure
4. Recognize Employer Responsibilities
5. Recognize the Importance of Business Related Ethics

F. Develop Communications with Groups and Individuals

1. Improve Written Communications
2. Improve Verbal Communications
3. Improve Non-Verbal Communications
4. Participate in Group Discussions
5. Conduct a Successful Meeting
6. Work with Diverse Groups
7. Remove Barriers to Communication
8. Listen Effectively
9. Make Friends

G. Demonstrate Group and Individual Efficiency

1. Develop a Program of Work
2. Organize Groups
3. Establish Personal Goals
4. Manage Time
5. Make Decisions
6. Solve Problems
A. Analyze the Importance of Wildlife Management
   1. Understand the Ecological Benefits of Wildlife
   2. Understand the Economic Benefits of Wildlife
   3. Identify the Aesthetic Benefits of Wildlife

B. Describe the History of Wildlife and Fish Management
   1. Identify Historical Aspects of Wildlife Management
   2. Identify the Historical Development of Fish Management

C. Discuss Policies, Laws, and the Administration of Wildlife Management
   1. Identify State and Federal Agencies in Wildlife Conservation
   2. Review State and Federal Laws Concerning Wildlife (Including Hunting Leases)
   3. Identify Policies Affecting Wildlife
   4. Discuss Hunter Safety

D. Identify the Basic Ecological Concepts
   1. Understand Ecosystems
   2. Understand Carrying Capacity and Population Effects

E. Identify Wildlife and Fish Species
   1. Examine Animal Species, Including Fur Bearers
   2. Identify Fish Species (Fresh and Salt Water)
   3. Identify Fowl Species
   4. Identify Exotic Game

F. Understand the Management of the Wildlife and Fish Population
   1. Explore Water, Food, and Cover Requirements of Wildlife
   2. Examine and Develop Habitats for Wildlife Production
   3. Discuss the Management of Wildlife Populations
   4. Discuss the Management of Fish Populations
G. Identify Special Areas of Importance in Wildlife and Fish Management

1. Identify Non-game and Endangered Species
2. Discuss the Importance of Using Genetics to Improve Wildlife
3. Discuss Commercial Game and Fish Enterprises
4. Review Procedures for Handling Misplaced Wildlife

H. Acquire Knowledge Concerning the Use of Natural Resources for Outdoor Recreation

1. Identify Recreational Enterprises
2. Identify Methods of Developing Recreational Enterprises
3. Discuss the Management of Recreational Enterprises
4. Review State and Federal Policies Concerning Recreational Activities

I. Explore Career Opportunities in Wildlife and Recreation Management

1. Identify Careers Opportunities in Wildlife Management
2. Identify Career Opportunities in Outdoor Recreation Management

J. Plan and Conduct Leadership Activities Related to Wildlife and Recreation Management

1. Develop Leadership Skills Related to Wildlife and Recreation Management
2. Plan and Conduct Leadership Activities Related to Wildlife and Recreation Management

K. Manage Records Related to Energy
Agriscience 491 - Pre-Employment Laboratory in Forest Products Harvesting

I. Introduction to Forestry
   A. Review of Forestry in the United States
   B. Importance of Forestry
   C. Multiple-Use Concept of Forests
   D. Beneficial Influences of Forests

II. Occupational Opportunities in Forestry
   A. Employment Opportunities in Forestry Occupations
   B. Organizations which Employ Persons Trained in Forestry
   C. Employment Policies
   D. Choosing an Occupation
   E. Finding a Job and Preparing for an Interview
   F. Employee - Employee and Employee - Employer Relations
   G. Employee Benefits and Payroll Information

III. Forest Trees
   A. Tree Physiology
   B. Tree Identification (Dendrology)
   C. Stages of Tree Identification
   D. Tree Crown Classification

IV. Forest Environment
   A. Physical Factors
   B. Biological Factors
   C. Geology and Forest Soils
   D. Forest Ecology
   E. Forest Types and Density

V. Wood Characteristics, Identification, and Uses
   A. Wood Characteristics
   B. Wood Identification
   C. Commercial Trees of Texas and Their Uses
   D. Species of Localized Importance
VI. Forest Protection
A. Forest Fires
B. Insects of the Forest
C. Diseases of Forest Trees
D. Injury by Animals
E. Weather Damage
F. Controlling Undesirable Species
G. Safe Use of Chemicals
H. Safety in Fire Fighting

VII. Reforestation
A. Natural Reforestation
B. Artificial Reforestation
C. Source of Seedlings
D. Guidelines for Planting Trees
E. Care of the Plantation

VIII. Applied Silviculture
A. Systems of Cutting
B. Specialized Tree Production
C. New Varieties (Cross Pollination)

IX. Forestry Measurements
A. Land Surveying
B. Tree Volumes
C. Log Measurements and Grades
D. Cruising and Estimating Timber
E. Safe Practices in Forest Measurement Operations

X. Forest Management and Economics
A. Forest Management Activities
   (Planning forest utilization and protection, devising forest plans: planning forest operations including: mensuration, road systems, logging, salvaging dead and diseased timber, timber growing, soil conservation, water conservation, wildlife protection, forage for livestock, and recreational areas; and administration of forest operations)
B. Commercial Considerations
   (Costs of forest land, cost of timber growing practices such as taxes, land use value, etc., and costs of marketing timber)
XI. Timber Harvesting
   A. Planning the Timber Harvest
   B. Purchasing Stumping
   C. The Harvesting Operation
      (Felling and bucking, skidding and pre-hauling, loading, hauling, and labor for harvesting operations)

XII. Forest Products Utilization
   A. Primary Wood Products
      (Sawlogs, lumber, pulpwood, fence posts, poles and piling, railroad ties, mine timbers, plywood, and veneer)
   B. Lumber Manufacturing
      (Sawmill layout, lumber grading, and seasoning lumber)
   C. Manufactured Products Other Than Lumber
      (Wood construction products, furniture, containers, fuel, and chemically derived products)
   D. Wood Preservation

XIII. Business Methods Relating to Forestry
   A. Business Aspects of Forestry
      (Forest business records, timber sales, stumping appraisal and value, and management costs)
   B. Taxation
      (Property tax, ad valorem tax, yield tax, and tax assessments)
   C. Forest Laws
   D. Real Estate
      (Property rights, contracts, deeds and conveyances, mortgages, leases, liens, property evaluation, sales, and title searching and registration)

XIV. Agricultural Leadership
   A. The Future Farmers of America
   B. Parliamentary Procedure
Agriscience - 365
Forestry and Wood Technology

Course Description: A course designed to familiarize the student with the forestry industry. Technical skills will be developed in the areas of dendrology, biometrics, management, utilization, and research. Additional skills will be developed for safe work practices, recordkeeping, career exploration, and leadership.

A. Explore the Historical Significance of Forestry
   1. Review pre-management era (utilization era) - prior to year 1900
   2. Describe management era (federal Assistance era) - year 1900 and later

B. Identify and Practice Forestry Dendrology Skills
   1. Recognize tree morphology
      a. Parts of the tree
      b. How the tree grows
   2. Identify leaves
      a. Margins
      b. Venation
      c. Shapes
      d. Arrangements
      e. Types (simple, compound, etc.)
      f. Keying trees
   3. Identify bark, twigs, and buds
      a. Arrangements
      b. Colors
      c. Textures
      d. Keying trees
   4. Identify Wood
      a. Colors
      b. Textures (porosities)
      c. Odors

C. Identify and Practice Forestry Biometrics Skills
   (Mensuration Techniques and Tools)
   1. Calculate tree volume (board feet, cordage, and tonnage)
   2. Determine timber growth and yield (site index, productivity, growth tables, etc.)
   3. Cruise timber stands (compass and pacing methods plus estimating value)
D. Perform Forestry Management Skills

1. Examine management options
   a. Selection (selective thinning) (uneven age method)
   b. Plantation (clear cutting) (even age method)
   c. Regeneration (seeding)
   d. Specialty tree crops

2. Evaluate multiple-users
   a. Watersheds
   b. Recreational areas
   c. Wildlife
   d. Products

3. Compare/contrast forest prescriptions
   a. Timber stand improvement (TSI)
   b. Fire
   c. Chemical
   d. Pre-commercial thinning

4. Identify and control insects and diseases of southern pine forests

5. Locate sources of management assistance (public, private, and institutional)

E. Recognize Pine and Hardwood Forests Utilization Practices

1. Discuss harvesting practices (equipment/safety)
2. Describe merchandising practices (marketing/sales)
3. Identify primary manufacturing practices/products
   a. Lumber
   b. Plywood
   c. Composites
   d. Paper
   e. Other: biomast, firewood, tool handles, baskets, etc.

4. Examine secondary manufacturing practices/products
   a. Treating
   b. "Shakes"
   c. Others: ch.ps, sawdust for fuel, bedding, bark mulch, etc.

F. Identify Research in Forestry and Wood Technology

1. Recognize current research developments
2. Apply research and development in the classroom and laboratory
G. Recognize Safe Word Practices That Apply to Forestry and Wood Technology
   1. Identify personal safety measures
   2. Use safe work practices in forestry and wood science

H. Manage Records Related to Forestry and Wood Technology
   1. Maintain records related to forestry and wood technology
   2. Analyze records related to forestry and wood technology

I. Explore Career Opportunities in Forestry and Wood Technology
   1. Identify careers in forestry and wood technology
   2. Identify activities of a professional forester

J. Plan and Conduct Leadership Activities Related to Forestry and Wood Technology
   1. Develop leadership skills related to forestry and wood technology
   2. Participate in leadership activities related to forestry and wood technology
Agriscience 491 -
Pre-Employment Laboratory Training in
Agricultural Resources

I. Introduction to Agricultural Resources
A. Identifying Agricultural Resources in the Community, State, and Nation
   1. Land
   2. Water
   3. Air
   4. Fish and Other Aquatic Life
   5. Wildlife
   6. Outdoor Recreation
   7. Forestry
B. Determining the Importance and Economic Impact of Agricultural Resources in the Community, State, and Nation

II. Occupational Opportunities in Agricultural Resources
A. Identifying Occupations in the Agricultural Resources Areas
B. Employment Opportunities and Occupational Requirements
C. Choosing an Occupation
D. Finding a Job and Preparing for an Interview
E. Employee-Employee and Employee-Employer Relations
F. Employee Benefits and Payroll Information

III. Agricultural Leadership
A. The FFA
B. Parliamentary Procedure

IV. Land Resource Management
A. Introduction to the Real Estate Industry
B. Real Estate Instruments (Deeds and Conveyances)
C. Real Estate Ownership
D. Real Estate Appraisal
E. Real Estate Licensing
F. Real Estate Sales
G. Real Estate Finance (Credit)
H. Real Estate Brokerage
I. Planning and Zoning Laws and Restrictions
V. Water Resource Management

A. Clean Water Resource Management
   1. Clean Water Resources
   2. Surface Water Rights
   3. State Water Development Plan
   4. Local Water Development System
   5. Water Plan Operations Licensing
   6. Irrigation Water

B. Waste Water Resources Management
   1. Sewer Systems
   2. Water Pollution in Lakes and Streams
   3. Treating Waste Water
   4. Laws and Regulations

VI. Air Resource Management

A. Source and Effect of Air Pollutants
3. Air Quality Standards
C. Administration and Monitoring
D. Air Pollution Control
E. Community Action Programs

VII. Managing Fish and Other Aquatic Life

A. Identification for Game and Non-Game Fish
B. Establishing and Managing Fish Ponds
C. Managing Lakes and Streams
D. Laws and Regulations Concerning Fish
E. Resources
F. Equipment Used in Recreation and Commercial Fishing
G. Commercial Catfish Production
H. Fish Hatchery Operations
I. Shrimp Operations
J. Oyster Operations
K. Marina Operations

VIII. Managing Wildlife and Wildlife Environment

A. Identification of Animal and Bird Species
B. Managing Wildlife Populations
C. Wildlife Conservation
D. State and Federal Agencies in Wildlife Conservation
E. State and Federal Laws and Regulations
F. Hunting Leases
IX. Outdoor Recreation

A. Recreational Use of Natural Resources
   1. Demand for Recreational Enterprises
   2. Kinds of Recreational Enterprises

B. Developing Recreational Enterprises
   1. Campgrounds and Picnic Areas
   2. Water Recreation (Swimming, Skiing, Sailing, Canoeing, Rowing, Boating, and Fishing)
   3. Marinas
   4. Swimming Pools
   5. Golf Courses
   6. Archery Ranges
   7. Hiking and Riding Trails
   8. Hunting Preserves
   9. Riding Stables
  10. Dude Ranches

C. Administration of Recreational Enterprises
   (Business Procedures, Legal Restrictions, Public Relations, Employment, Insurance, and Income Tax)

D. Maintaining and Operating Recreational Enterprises
   1. Soils
   2. Shrubs
   3. Grasses
   4. Roads
   5. Housing
   6. Landscaping

E. Securing Technical Assistance

F. Arranging for Financial Assistance (Credit)

G. State and Federal Recreational Enterprises

X. Forest Resource Management

A. Importance of Forestry
B. Kinds of Forests
C. Tree Identification
D. Establishing the Forest
E. Improving the Forest
F. Forest Mensuration
G. Forest Insect and Disease Control
H. Forest Fire Control
I. Forest Recreation
J. Forest Wildlife
XI. Agricultural Resource Safety
A. Hunter’s Safety Course
B. Texas Skippers Course
C. Red Cross Basic Outdoor Boating
D. Standard First Aid and Personal Safety
E. Fire Fighting Safety

XII. Agricultural Resource Mechanics
A. Chain Saws
   1. Selection
   2. Operation
   3. Safety
   4. Maintenance
   5. Repair
B. Boats and Boating Equipment
   1. Boat Design and Construction
   2. Boat Operation and Maintenance
   3. Boat Repair
   4. Boat Motor Design and Selection
   5. Boat Motor Trouble Shooting and Repair
   6. Boat Trailer Design and Selection
   7. Boat Trailer Operation and Maintenance
   8. Boating Safety Regulations
   9. Boating Safety Equipment Selection and Use
C. Recreational Vehicles
   1. Mobile Homes (Design, Construction, Selection, Location, Delivery and Set-Up, and Maintenance)
   2. Campers (Design, Construction, Selection, Regulations, Maintenance, and Safety)
   3. Trail Bikes
D. Electricity

XIII. Taxidermy
AGRICULTURE 2 + 2
Forest Technician Option
Panola College

Introduction to Forestry
96 hours

Silviculture I
174 hours

Dendrology
150 hours

Forest Math
60 hours

Forest Communications
48 hours

Forest Drafting
48 hours

Forest Office Machines
48 hours

Forest Protection
108 hours

Forest Surveying
158 hours

Forest Mapping
128 hours

Silviculture II
181 hours

Forest Harvesting
55 hours

Forest Measurements
300 hours

Forest Business Methods
80 hours

Forest Products
80 hours

Forest Personnel
Management/Safety
80 hours

Elements of Wildlife
Ecology 84 hours

Same courses as for Certificate of Completion Diploma in a one year block.
I. INTRODUCTION TO FORESTRY (96 hours/65 percent field applications)

A. Introduction to forestry and the natural resource field.
    1. The role of forestry and natural resources in meeting the needs of society.
    2. Familiarization with terminology.
    3. Historical development of conservation in North America.
    4. Key individuals involved with natural resources.

B. Location of Forests.
    1. Location of the world forest regions.
    2. Location of North American forest regions.
    3. Location of U.S. forest types.
    4. Location of the forest types of the Southern region with emphasis on the Western Gulf Region.

C. Overview of the role of forest products in local, regional, and national economics.

D. Forest policy, key legislation, and laws.

E. Federal agencies directly involved in natural resource management.

F. State agencies directly involved natural resource management.

G. The practice of forestry on private lands.
    1. Industrial lands.
    2. Non-industrial lands.

H. Forestry education.

I. The effects of environmental issues on forestry.

J. The role of forests and forestry in the future.
II. SILVICULTURE I (175 hours/ 65 percent field applications)

This course is also called Silvics, Forest Biology, or Forest Science. The primary function is to study information from the areas of general and forest ecology, plant physiology, soils, meteorology, physical science, and field biology methods.

A. Introduction to forest science.
   1. Terminology and basic scientific principles.
   2. Outline of general ecology.

B. Plant physiology and morphology.

C. The forest environment.
   1. Factors of sunlight.
   2. Factors of atmospheric moisture.
   3. Factors of air movement and temperature.
   4. Factors of climate and weather.
   5. Factors of topography.

D. Forest influences.
   1. Effects on physical environment.
   2. Effects on animal life.

E. The forest
   1. Vegetative units and their classifications.
   2. Origin and development of forest communities.
   4. Form and life of trees.
   5. Development, growth, and yield of trees and forest stands.

F. Environmental Impact Statements.
III. DENDROLOGY (150 hours/65 percent field work and applications)

A course designed to educate the student of forest plant identification. Plants (trees, shrubs, and vines) will be those of importance for timbering, landscaping, wildlife habitat, and environmental quality. While, trees from all over North America will be covered the main focus will be on plants of the western gulf region. The use of common names and scientific names will considered important. Plant geography together with commercial and non-commercial uses of the plants covered will be emphasized.

A. Introduction
   1. Review of plant anatomy, especially leaf and twig features.
   2. Introduction into the use of identification keys.

B. Plant families will be covered with breakdown into genus and species. Shrubs and vines which are found in the local region will be covered.

C. Plant uses for wood, medicinal, wildlife, ornamental, and other uses current or historical will be covered.

D. Site relationships of plants and their environments will be used to stress identification of plants.

E. Leaf and twig collections will be required.

F. Fruit identification will be studied.
VIII. FOREST PROTECTION (108 hours of instruction/ 65 percent in laboratory or field applications)

This course is designed to present each student with a basic understanding of the work necessary to protect the forest from its many enemies, both natural and man-caused. These include fire, insects, disease, animals and environmental problems.

A. General introduction to protection

B. Forest Fire Protection
   1. Place of fire protection in forestry and the history of fire problems
   2. Causes and effects of wild fires
   3. Fire Fuels
   4. Presuppression activities—education, laws, detection systems, and rating systems
   5. Suppression activities—equipment, supplies, fire fighting organizations, and training
   6. Fire analysis and economics

C. Forest Insect Protection
   1. Description of insects and symptoms
   2. Identification of insects and problems, including field surveying methods
   3. Analysis of extent of damage to plant/forest
   4. Prevention and/or control measures

D. Forest Disease Protection
   1. Description of diseases and symptoms
   2. Identification of diseases and problems, including field surveying methods
   3. Analysis of extent of damage to plant/forest
   4. Prevention and/or control measures

E. Protection from animals and man
   1. Description of problems created by animals and man
   2. Identification of extent of damage and problems, including field surveying methods
   3. Analysis of the affected resource
   4. Prevention and/or control measures

F. Protection from environmental factors
   1. General description of the problems and symptoms
   2. Identification of the problems and probable sources of damage
   3. Prevention and/or control measures
IX. FOREST SURVEYING (158 hours of instruction/ 65 percent in field or laboratory applications)

The main objectives of this course is to produce good work habits; a basic knowledge of the equipment and methods used in surveying; and an appreciation for accurate and neat work. With the knowledge of this one course, any forest technician student should be able to find work with a field surveying crew.

A. Surveying systems
   1. History of land surveying--national and regional
   2. Knowledge of the "Metes and Bonds" system
   3. Knowledge of the "Glo" system

B. Surveying terminology

C. Surveying legal problems and procedures

D. Note keeping in field books

E. Surveying equipment
   1. Hand compasses
   2. Staff compasses
   3. Hand levels
   4. Transits
   5. Tapes and Chains
   6. Plane tables
   7. Stadia

F. Measurement of directions, angles and distances

G. Deeds--both location and writing

H. Field surveys
   1. Boundary
   2. Topographic
   3. Road and/or trail layout

I. Levels
   1. Differential
   2. Profile
   3. Borrow-pit
   4. Topographic

J. Area calculations
X. FOREST MAPPING (128 hours of instruction/ 65 percent in laboratory and field instruction)

This course will combine the elements of map reading, map use, and map preparation. Skills begun in the Forest Drafting course will be utilized in this course. Field work from the Forest Surveying and Silviculture courses will provide much of the work assignments for this course. The use of aerial photogrammetry will be covered along with this work in natural resources.

A. Basic map skills
1. Knowledge of reading maps and their symbols and use of the scales
2. Ability to use maps and aerial photos to locate places in either the field or office
3. Type of information needed to draw and/or read maps

B. Basic map preparation
1. How to develop maps from deeds, survey books or other sources of information
2. How to prepare sketch maps for field crews

C. Aerial photogrammetry
1. Introduction to the making and use of aerial photos in natural resource work
2. How to use aerial photos in natural resource problems—protection problems, planting projects, etc.
3. How to order and obtain aerial photo coverage

Much of the field work in this course will be done in an indoor setting. The use of the drawing equipment and stereoscopes will occupy a great deal of the field work. There will be work in orientering to learn the use of maps in the field.
XI. SILVICULTURE II (131 hours of instruction/ 65 percent in field applications)

The first course in Silviculture was the basic science course; while this is mainly the applications portion of the field. The science knowledge coupled with the field methods, applications, and equipment is the main portion of much of field forestry.

A. Reforestation
1. Site preparation
2. Seeding and planting procedures
3. Seedling survival studies
4. Nursery and seed orchard operations

B. Timber Stand Improvement (TSI) programs
1. Commercial thinning methods
2. Prescribed burning
3. Pruning operations
4. Pre-commercial thinning operations
5. Use of chemicals to control unwanted vegetation
6. Fertilization, drainage, etc.

C. Harvesting mature timber crops
1. Using artificial regeneration methods

D. Timber marking

E. Managing minor forestry products
1. Christmas trees
2. Other minor products

F. Bottomland and upland hardwood management
XII. FOREST HARVESTING (55 hours of instruction/ 65 percent involved with field or laboratory work)

This course is designed to provide the student with a general knowledge of the equipment, terminology, methods of timber removal and the legal aspects of the timber harvesting industry.

A. Introduction to harvesting
1. The history of the American logging industry
2. Development of the methods and equipment of the industry
3. Planning the harvesting of timber crop
4. Equipment used in harvesting the crop

B. Types of timber crops and their harvesting
1. Pulpwood
2. Sawtimber
3. Specialty products

C. The processing of timber crops
1. Felling
2. Limbing and bucking
3. Skidding and loading
4. Transportation

D. Organization and control of harvesting operations

E. Regional harvesting practices

F. Environmental concerns (BMP--Best Management Practices)

G. Timber procurement systems

Most of the field work will be involved with viewing what was covered in the classroom lectures, films, slides, and videos. Making safety inspection and harvesting analysis will be part of the field work. With the increased awareness on the environment, it is important that forest technicians understand the requirements in the BMP Guidelines. Some basic training in the safe use and maintenance of chain saws (bow and bar model's will be part of the field operation). The evaluation process will be covered by tests and reports.
XIII. FOREST MEASUREMENTS (300 hours of instruction with 65 percent of the instruction in field applications)

This course is the most singularly important course in the entire program and will serve to put many parts of the program together.

A. Sampling, estimation and probability
   1. Statistical concepts
   2. Common sampling designs
   3. Specialty sampling designs

B. Timber measurements
   1. Measurements
   2. Estimating the dimensions of standing trees

C. Volume tables
   1. Volume rules--board foot, cubic foot, metric
   2. Stock and stand tables
   3. Yield tables

D. Timber and resource cruises
   1. Basic resource cruises
   2. Timber and/or land acquisition
   3. Timber management plan inventory
   4. Tax and/or damage appraisal
   5. Continuous forest inventory systems
   6. Other timber resources

E. Scaling and measuring primary and secondary wood products

F. Timber inventory systems
   1. Plot sampling
   2. Strip sampling
   3. Point sampling
   4. Random versus systematic sampling systems

G. Sampling of other natural resources
   1. Wildlife resources
   2. Range resources
   3. Water resources
   4. Environmental resources
   5. Recreational resources

A large portion of the field work will be done out-of-doors in the actual collection of timber data. Almost an equal amount of time will be involved with laboratory work used to prepare the field data for use by the professional forestry staff. There will be tests to determine the students' abilities in estimating diameters, heights, and other resource factors that will facilitate speed of operations.
XIV. FOREST BUSINESS METHODS (80 hours of instruction/65 percent in field or laboratory applications)

This is the combination of Forest Economics, Forest Management, Forest Finance and Valuation, and Forest Law. The objective is to give each student the necessary information needed to develop management plans, project timber growth, determine cutting cycles, and write basic reports.

A. Forest Management
   1. Management plans
   2. Stand table projections, stocking tables, and other information to regulate forest growth and yield
   3. Establishing rotation and annual yields
   4. Even-aged versus all-aged forest management

B. Forest Economics
   1. Supply and demand economy
   2. Marginal operations
   3. Project costing

C. Forest Finance and Valuation
   1. Forest valuation--land and/or timber
   2. Compound interest--present and future value
   3. Valuation of various forest resources

D. Forest Law
XV. FOREST PRODUCTS (80 hours of instruction/ 65 percent field and laboratory applications)

The objective of this course is to inform the forest technician of the various products that are derived from the raw materials grown in the woods; as well as, the secondary products made from the primary products, their waste, or other areas of the forests. It also stresses the importance of maintaining good resource management programs in the field to provide quality products.

A. Forest utilization economics

B. Wood products
   1. Round timbers products
   2. Mine and railroad timbers
   3. Hardwood and pine lumber
   4. Wooden containers and pallets
   5. Composite wood products
   6. Minor wood products

C. Chemically derived products and products from chemically altered materials from the forest
   1. Pulp and paper products
   2. Chemically derived products
   3. Naval stores
   4. Minor products

D. Product grading and quality control organizations

E. Glues and adhesives

F. Seasoning and preservation

G. Merchandising of forest products
XVI. FOREST PERSONNEL MANAGEMENT AND SAFETY (80 hours of instruction/ 65 percent will be field or laboratory in nature)

With the rising cost of workman compensation insurance; the hospitalization and health insurance companies are stressing safety training at all levels of their organizations. Attention is given to field personnel, as normally graduates of the Panola's Forest Technician Program quickly gain foremanship positions and become a part of the management system. These individuals also are marked to take key leadership roles in directing field operations and are often into foremanship positions quickly.

A. Safety Training
1. Safety talks--materials and presentations
2. Red Cross First Aid and CPR training
3. Conducting safety inspections
4. OSHA Standards
5. Other safety and health standards of the forest and forest products industry

B. Personnel management
1. Personnel supervision methods
2. Foremanship
3. Labor relations
4. Record systems and documentation
XVII. ELEMENTS OF WILDLIFE ECOLOGY (84 hours of instruction/ 65 percent field and laboratory applications)

The objective of this course is to provide a basic understanding of the general ecology principles and timber management practices as they would be applied to wildlife management. Work will be done in conjunction with the Texas Parks and Wildlife Department and private industrial timber companies whenever possible.

A. Wildlife ecology
   1. History of key people and laws
   2. Terminology
   3. Habitat management principles

B. Types of wildlife

C. Wildlife production and regulation policies
   1. Preserves
   2. Exotic animals
   3. Lease operations
   4. Harvesting laws and regulations
   5. Federal and state enforcement policies
   6. Endangered species
   7. Predator control

D. Habitat types and food stuffs
IV. FOREST MATH

This math course is strictly for the forestry student. The topics of general math through and including the basics of algebra, solid geometry, and plane trigonometry are covered. Elementary forest statistics are presented. Pre-testing is conducted to determine the class and individual levels at the beginning of the course. Individual instruction programs are designed for those with weaker math skills through the use of a lab period to bring them up to the functional levels needed to perform the general tasks of a forest technician. Lectures, sample problems, homework, and in-class drills are used and count at least 50 percent of the grade. The other half comes from exams over topics covered. Minimum acceptable grade is a "C".
V. FOREST COMMUNICATIONS

This course is designed to aid the forest technician with the written and spoken word in his/her daily work place. Pre-testing is provided to determine each individual's level of knowledge and as far as possible, individual instruction is provided to strengthen deficiencies. The preparation of memos, reports, and forms is stressed as part of the daily job. Basic keyboarding and beginning uses of the computer and word processing are introduced. Tests along with written and oral reports are used to determine the course grade. A "D" is the minimum acceptable grade.
VI. FOREST DRAFTING

This course is designed to prepare the student for later work in mapping and surveying. The principle objectives of the course are to give the student:

1. Knowledge in the use drawing/drafting equipment.
2. An ability to draw freehand to scale.
3. An ability to letter neatly freehand and with guides in various styles.
4. An ability to lay out and draw charts and graphs.
5. An ability to lay out, draw, and letter maps.
6. An ability to redraw maps and objects at various scales.
7. Introduction to the basics of CAD (Computer Assisted Drafting) is presented.

A minimum of lecture is used in this course. Most of the work and grade is derived from physical drawing and lettering of maps and objects. The basic elements of Computer Assisted Drafting (CAD) is presented. A minimum grade of "D" is acceptable in this course.
VII. FOREST OFFICE MACHINES

This course is designed to acquaint the forest technician to the business machines used in the workplace. Adding machines, calculators, and computers make up the main equipment. The majority of the time is spent in a laboratory setting and the grade mostly comes from prepared program exercises. A "D" is the minimum passing grade in this course.
The lists of reference materials include the following:

- A list of references by secondary course title.
- A general reference list is provided as supplemental materials to those listed by course.
- A list of references needed for postsecondary.
### Instructional Materials Service

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Other References:

- 0202 Household Hazardous Waste Wheel
- 8515 Sustainable Agriculture

Computer Programs:

- 9132 Apple II Plus - Calculating Soil Loss
- 9133 IBM-PC - Calculating Soil Loss
- 9134 TRS-80 Model III - Calculating Soil Loss
- 9140 Apple II Plus - Manure Management
- 9141 IBM-PC - Manure Management
- 9142 TRS-80 Model III - Manure Management
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Other References:

0269  The Mammals of Texas Handbook
0271  Quail Management Handbook
0272  Ducks at a Distance
0273  Gray Squirrel in Texas
0274  Shrimp Fishery in Texas
0275  Salt Water Fishes in Texas
0278  Poisonous Snakes in Texas
0281  Freshwater Fishes in Texas
0282  The Texas Oyster Fishery
0283  Inland Aquaculture Handbook
0284  Field Guide to Reptiles and Amphibians of Texas
0285  Field Guide to Snakes of Texas
0286  Field Guide to Wildlife of Texas

Color Slides:

5701  Game and Fur-Bearer Animal Species Identification
5703  Fish Species Identification
5704  Water Fowl Identification
5705  Land Bird Identification
5707  Reptile and Amphibian Species Identification

Computer Software:

9164  Apple - Hunter Education
9165  Apple - Stalking the Whitetail Deer
9184  Apple IIE/C - Hunting Wild Gobbler

VHS Videos:

9621  Hunter Education: The Only Way to Go
9622  Firearm Safety Begins in the Home
9623  The Responsible Hunter
9624  Tree Stands: Above All, Safety First
9626  Smallmouth Bass
9628  Surface Lures and Buzz Baits
9630  Bass Fishing: Top to Bottom
9631  Understanding Bass
9632  Way of the Whitetail
9633  Successful Whitetail Deer Hunting
9634  Bowhunting for Whitetail Deer
9635  Successful Mule Deer Hunting
9636  Duck and Goose Hunting
9637  Introduction to Duck Calling
### Instructional Materials Service
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Forestry Suppliers, Inc.
205 W. Rankin Street
P.O. Box 8397
Jackson, Mississippi 39284-8397

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Books:
C9734N  The Tree Identification Book
C13423N  Tree Care

Slides and Filmstrips:
C10135N  The Forest
C10170N  Trees of America
C10204N  Insects of Horticultural and Forest Tree Crops

Computer Software:
AC595  Urban Forestry Package (Apple)
AC596  Urban Forestry Package (IBM)
HB368  Managing Our Natural Resources Review (Apple - 5 1/4)
HB369  Managing Our Natural Resources Review (Apple - 3 1/2)
HB370  Managing Our Natural Resources Review (IBM - 5 1/4)
HB371  Managing Our Natural Resources Review (IBM - 3 1/2)
HB372B  Managing Our Natural Resources Review (Macintosh - 3 1/2)
HB170  Forestry and Related Review (Apple - 5 1/4)
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# Panola College Forest Technician Program

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**Wordbooks - Produced Locally**

- Forest Technician Program Handbook
- Introduction to Forestry Handbook
- Silviculture I Handbook
- Dendrology Handbook
- Forest Protection Handbook
- Silviculture II Handbook
- Forest Surveying and Mapping Handbook
- Forest Measurements Handbook
- Forest Business Methods Handbook

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IX. LINE DRAWING OF RECOMMENDED FACILITY

The following is a line drawing of the recommended classroom and shop facilities for the 2+2 program in Forest Technology.
X. LIST OF RECOMMENDED TOOLS AND EQUIPMENT

The following is a list of tools and equipment to be used in the teaching of the skills necessary for a student to succeed in the agricultural 2+2 program.

The estimated prices used to determine costs were obtained from tool and equipment supply catalogs and local hardware and lumber companies.
Tools and Equipment

The following hand tool and equipment list specifies the recommended quantities of each tool needed to teach a class of twenty students, and this is the number that a school should purchase when initiating a 2+2 Agricultural Technologies Program for a Forest Technician.

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<td>23.00</td>
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<tr>
<td>Paint Gun</td>
<td>1</td>
<td>133.00</td>
<td>133.00</td>
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<tr>
<td>ITEM</td>
<td>QUANTITY</td>
<td>RECOMMENDED COST PER UNIT</td>
<td>TOTAL COST</td>
</tr>
<tr>
<td>---------------------------</td>
<td>----------</td>
<td>---------------------------</td>
<td>------------</td>
</tr>
<tr>
<td>Biltmore stick</td>
<td>20</td>
<td>$32.25</td>
<td>$645.00</td>
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<tr>
<td>Protractor</td>
<td>20</td>
<td>4.50</td>
<td>90.00</td>
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<tr>
<td>Fire Extinguisher</td>
<td>1</td>
<td>69.00</td>
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<tr>
<td>Pocket knife</td>
<td>20</td>
<td>17.50</td>
<td>350.00</td>
</tr>
<tr>
<td>Chains - 20'</td>
<td>2</td>
<td>60.00</td>
<td>120.00</td>
</tr>
<tr>
<td>Diameter Tape</td>
<td>5</td>
<td>60.00</td>
<td>300.00</td>
</tr>
<tr>
<td>Increment Borer</td>
<td>2</td>
<td>143.00</td>
<td>286.00</td>
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<tr>
<td>Safety Glasses</td>
<td>20</td>
<td>6.25</td>
<td>125.00</td>
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<tr>
<td>Polycorder</td>
<td>1</td>
<td>3,830.00</td>
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<tr>
<td>Staff Compass</td>
<td>1</td>
<td>380.00</td>
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<tr>
<td>Stereoscope</td>
<td>1</td>
<td>495.00</td>
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</tr>
<tr>
<td>Drip Torch</td>
<td>1</td>
<td>137.50</td>
<td>137.50</td>
</tr>
<tr>
<td>Engineer's Scale</td>
<td>20</td>
<td>12.75</td>
<td>255.00</td>
</tr>
<tr>
<td>First Aid Kit</td>
<td>1</td>
<td>39.95</td>
<td>39.95</td>
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<tr>
<td>Fire Rake</td>
<td>5</td>
<td>21.95</td>
<td>109.75</td>
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<tr>
<td>Boomers</td>
<td>2</td>
<td>57.75</td>
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<tr>
<td>Axes</td>
<td>3</td>
<td>37.50</td>
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<tr>
<td>Water cooler - 10 gal.</td>
<td>1</td>
<td>49.95</td>
<td>49.95</td>
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<tr>
<td>Tree injector</td>
<td>1</td>
<td>199.00</td>
<td>199.00</td>
</tr>
<tr>
<td>Machetes with leather sheath</td>
<td>2</td>
<td>32.00</td>
<td>64.00</td>
</tr>
<tr>
<td>Abney level</td>
<td>1</td>
<td>140.00</td>
<td>140.00</td>
</tr>
<tr>
<td>Engineer's Tape- 100'</td>
<td>1</td>
<td>101.50</td>
<td>101.50</td>
</tr>
</tbody>
</table>
SUPPLIES AND EQUIPMENT THAT MAY BE NEEDED
FOR TEACHING THE 2 + 2 AGRISCIENCE TECHNOLOGY PROGRAM
FOR A FOREST TECHNICIAN

In addition to the tools and equipment previously listed, the supplies and equipment listed below
are necessary to develop skills and competencies needed by students.

2-3  Gallon pressure sprayers
6  Pair rubber gloves
1  Set of insect and parasite mounts
1  Dissecting set
20  Rolls of flagging in assorted colors
20  Tally Pads
20  Aerial Photographs
1  Soil Auger, 2" Bit, 40" Shank
1  Soil Testing Kit Including: Nitrogen Tester, Phosphate Tester, Potash Tester, pH Tester,
   Test Tubes, Reagents, and Filters
1  Plant Tissue Testing Kit
1-5  Bo.:rum No. 2 Farm Level with Tripods and Targets
1  Farm Level, Target, and Rod
1  Chain Tape, 100'
4  Insect Killing Jars
1  Soil Thermometer
1  Set of wood samples

Visual Aids Equipment:

16 mm movie projector
35 mm film strip - slide projector
Nonreflective screen for overhead projector
Reflective screen for movie projector
35 mm camera
Video tape equipment - recording and playing
Computers (8)
Overhead projector
Video camcorder
Forestry Software

A Forester working in the field would need the following tools or equipment:

Pick-up Truck
Light Dozer (Furnished by company)
Winch for Pick-up
Two-way Radio
XI. COMPETENCY PROFILE

The following competency profile will be marked at the secondary level for those competencies achieved by the student during grades 11 and 12.

The profile will then be sent to the postsecondary institution where it will be updated as the student progresses.

Upon graduation from the postsecondary institution, a copy of the profile will have the college seal affixed, and will be provided to the student for presentation to a proposed employer.
**COMPETENCY PROFILE**

Secondary School ___________________________ Postsecondary School ___________________________

Agriculture 2+2 Program Area - Forest Technician Career Goal ___________________________

Name ___________________________ Social Security Number ___________________________ Age ______

Address ___________________________ Date of Birth ___________________________

Phone Number ___________________________ Sex ______ Racial/Ethnic Designation ___________________________

Parent's Name ___________________________ Phone Number ___________________________

---

### Secondary Agriculture Courses Completed

<table>
<thead>
<tr>
<th>Name of Course</th>
<th>Date Completed</th>
</tr>
</thead>
<tbody>
<tr>
<td>AGSC 101 Introduction to World Agricultural Science and Technology</td>
<td></td>
</tr>
<tr>
<td>AGSC 102 Applied Agricultural Science and Technology</td>
<td></td>
</tr>
<tr>
<td>AGSC 231 Animal and Plant Production</td>
<td></td>
</tr>
<tr>
<td>AGSC 281 Energy and Environmental Technology</td>
<td></td>
</tr>
<tr>
<td>AGSC 311 Agribusiness Management and Marketing</td>
<td></td>
</tr>
<tr>
<td>AGSC 312 Personal Skill Development in Agriculture</td>
<td></td>
</tr>
<tr>
<td>AGSC 323 Agricultural Power Technology</td>
<td></td>
</tr>
<tr>
<td>AGSC 333 Plant and Soil Science</td>
<td></td>
</tr>
<tr>
<td>AGSC 365 Forestry and Wood Technology</td>
<td></td>
</tr>
<tr>
<td>AGSC 381 Wildlife and Recreation Management</td>
<td></td>
</tr>
<tr>
<td>AGSC 491 Forestry Pre-Employment Laboratory</td>
<td></td>
</tr>
<tr>
<td>AGSC 491 Agricultural Resources Pre-Employment Laboratory</td>
<td></td>
</tr>
</tbody>
</table>

---

### Postsecondary Agriculture Courses Completed

<table>
<thead>
<tr>
<th>Name Of Course</th>
<th>Date Completed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction to Forestry</td>
<td></td>
</tr>
<tr>
<td>Dendrology</td>
<td></td>
</tr>
<tr>
<td>Forest Protection</td>
<td></td>
</tr>
<tr>
<td>Forest Drawing</td>
<td></td>
</tr>
<tr>
<td>Forest Math</td>
<td></td>
</tr>
<tr>
<td>Forest Communications</td>
<td></td>
</tr>
<tr>
<td>Forest Business Machines</td>
<td></td>
</tr>
<tr>
<td>Forest Surveying</td>
<td></td>
</tr>
<tr>
<td>Forest Mapping</td>
<td></td>
</tr>
<tr>
<td>Forest Measurements</td>
<td></td>
</tr>
<tr>
<td>Silviculture I</td>
<td></td>
</tr>
<tr>
<td>Silviculture II</td>
<td></td>
</tr>
<tr>
<td>Forest Harvesting</td>
<td></td>
</tr>
<tr>
<td>Forest Business Methods</td>
<td></td>
</tr>
<tr>
<td>Forest Products</td>
<td></td>
</tr>
<tr>
<td>Forest Personnel Management/Safety</td>
<td></td>
</tr>
<tr>
<td>Wildlife Ecology</td>
<td></td>
</tr>
</tbody>
</table>

---

**COMMENTS:** ___________________________

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158
Directions: Evaluate the student using the rating scale below. Check the appropriate number to indicate the degree of competency. The rating for each of the tasks should reflect job readiness.

Rating Scale:
4 Skilled - can work independently with no supervision
3 Moderately Skilled - can perform job completely with limited supervision
2 Limited Skill - requires instruction and close supervision
1 No Exposure - no experience or knowledge in this area

A. CRUISE TIMBER

<table>
<thead>
<tr>
<th>4</th>
<th>3</th>
<th>2</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Verify Property Lines and Ownership</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Review Aerial Photograph</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Draw a Field Map</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Estimate and Record Volume</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Determine Stand Composition and Prescription</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Prepare Cruise Report</td>
<td></td>
<td></td>
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</table>

B. TIMBER SALES SECURITY

<table>
<thead>
<tr>
<th>4</th>
<th>3</th>
<th>2</th>
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</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Review Contracts</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Conduct Pre-logging Conference</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Inspect Job Site</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Conduct Post Inspection of Job Site</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

C. TIMBER ACQUISITION

<table>
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<tr>
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<th>2</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Contact Land Owner</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>2. Negotiate the Contract</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Execute the Contract</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

D. TIMBER MARKING

<table>
<thead>
<tr>
<th>4</th>
<th>3</th>
<th>2</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Determine the Production Objective</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Mark the Timber According to the Plan</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Prepare the Tally Sheet</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
E. HERBACEOUS CONTROL

1. Determine the Control Objective
2. Determine the Method of Control
3. Use Mechanical Control
4. Use Chemical Control
5. Perform Post-Job Inspection

F. INSECT AND DISEASE CONTROL

1. Detect Insect or Disease
2. Verify and Assess Infestation
3. Determine and Implement Control
4. Monitor the Control Measures

G. SUPERVISION OF EMPLOYEES AND CONTRACTORS

1. Schedule Employees Work
2. Assign Employees Work
3. Train Employees
4. Supervise Employee Activities
5. Negotiate Contract with Contractors
6. Monitor Contractor's Work
7. Perform Post Inspection of Contractor's Work

H. JOB IMPROVEMENT

1. Evaluate Existing Jobs
2. Develop Ideas for Job Improvement
3. Provide Continuing Education
4. Emphasize Safe Practices
I. ENVIRONMENTAL IMPACT MANAGEMENT

1. Carry Out Wildlife Management Plan
2. Comply With Best Management Practices
3. Maintain Environmental Records

J. PUBLIC RELATIONS

1. Communicate Positive Image
2. Accomplish Quick, Positive Solution to Problems
3. Provide Public Information

K. CONTROLLED BURNING

1. Develop a Burning Plan
2. Establish Fire Lines
3. Organize the Burn
4. Execute Site Preparation Burn
5. Execute Prescribed Burn
6. Perform Post Burn Inspection

L. SITE PREPARATION

1. Determine Planting Method
2. Apply Mechanical Method of Site Preparation
3. Apply Chemical Method of Site Preparation
4. Inspect Final Site Preparation

M. REGENERATION

1. Distribute Seedlings
2. Monitor the Contractors Work
3. Perform Final Inspection
4. Perform One Year Survival Check
### N. RECORD MANAGEMENT

1. Use Polycorder
2. Use Personal Computer for Word Processing
3. Use Personal Computer for Database Management
4. Use Personal Computer with Spreadsheets
5. Maintain All Company Records
6. Maintain Client Records
7. Maintain Daily Log
8. Use Calculator

### O. OPERATE AND MAINTAIN EQUIPMENT

1. Operate and Maintain Light Dozer
2. Operate and Maintain Transport Truck (Roll Back)
3. Operate and Maintain Chain Saw
4. Operate and Maintain Marking Equipment
5. Operate and Maintain Company Vehicles
6. Operate and Maintain All Terrain Vehicle
The following student monitoring and follow-up instrument is the one that will be used to monitor and follow the student one year after graduation from the postsecondary institution.

The 2+2 User's Group is considering adopting an instrument to be used for all 2+2 programs. At the time of this publication, the instrument has not been adopted.
Northeast Texas Community College
Project LONESTAR
Statistical Information Request

What is your primary reason for attending Northeast Texas Community College? (please check one)
☐ 1. Get a Job
☐ 2. Improve Skills Needed in Current Job
☐ 3. Get a Better Job
☐ 4. Maintain Licensure
☐ 5. Earn a Certificate
☐ 6. Earn a Two-Year Degree
☐ 7. Earn Credit to Apply to a Four-Year Degree
☐ 8. Personal Enrichment
☐ 9. Other

How long do you plan on being at Northeast Texas Community College? (please check one)
☐ 1. One Semester Only
☐ 2. Two Semesters
☐ 3. One Year
☐ 4. Two Years
☐ 5. Three Years
☐ 6. More Than Three Years

What is your current employment status? (please check one)
☐ 1. Employed Full-time (40 hours or more per week)
☐ 2. Employed Part-time (Less than 40 hours per week)
☐ 3. Employed as a Homemaker
☐ 4. Not Employed, Seeking Work
☐ 5. Not Employed, Not Seeking Work

What is your previous college-level academic experience? (please check one)
☐ 1. None
☐ 2. Some Postsecondary Education
☐ 3. Postsecondary Award, Certificate, or Diploma
☐ 4. Associates' Degree
☐ 5. Bachelor's Degree
☐ 6. Master's Degree
☐ 7. Doctoral Degree
☐ 8. First-professional Degree

If you consider yourself to be in any of the following categories, please check one.
☐ 1. Handicapped
☐ 2. Limited English Proficiency
☐ 3. Single Parent/Homemaker
☐ 4. Learning Disability
☐ 5. Culturally Disadvantaged
☐ 6. Academically Disadvantaged
☐ 7. Economically Disadvantaged
☐ 8. Physical Disability
☐ Deaf
☐ Deaf-Blind
☐ Hard of Hearing
☐ Orthopedically Impaired
☐ Other Health Impaired
☐ Speech Impaired
☐ Visually Handicapped

Describe the highest level of formal education obtained by your father. (please check one)
☐ 1. Not a high school graduate
☐ 2. High school graduate
☐ 3. Some college or associate's degree
☐ 4. Bachelor's degree or above

Describe the highest level of formal education obtained by your mother. (please check one)
☐ 1. Not a high school graduate
☐ 2. High school graduate
☐ 3. Some college or associate's degree
☐ 4. Bachelor's degree or above

How did you receive your schedule of classes? (please check one)
☐ 1. Called NTCC and it was mailed to you.
☐ 2. Came by NTCC and picked it up.
☐ 4. Other
Tex-SIS FOLLOW-UP

PROJECT FOLLOW-UP

Please make corrections to the information above if necessary.

Note: This survey is authorized by Public Laws 20 USC 3310 and 20 USC 3391. While you are not required to respond to this survey, your cooperation is needed to ensure that the results of this effort are comprehensive, reliable, and timely.

IDENTIFICATION

JOB TITLE

PROGRAM MAJOR

EMPLOYER (COMPANY NAME - INSTITUTION - ORGANIZATION, ETC.)

1. Is the job title and status of this individual accurate?
   - [ ] Yes
   - [ ] No: Please describe change(s) below.

2. What is your relationship with this individual?
   - [ ] Employer
   - [ ] Supervisor
   - [ ] Personnel staff
   - [ ] Co-worker
   - [ ] Other (describe)

OVER PLEASE!
Please rate the training received by this individual in the following personal skill areas. Please respond only to those areas you feel are appropriate.

<table>
<thead>
<tr>
<th>Area</th>
<th>Very Good</th>
<th>Good</th>
<th>Average</th>
<th>Poor</th>
<th>Very Poor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accepting responsibility</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Punctuality</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Personal initiative</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Willingness to learn</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Co-worker cooperation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Management cooperation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Work attendance</td>
<td></td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>Work attitude</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Personal appearance</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Compliance with policies</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Don't write in this column.

Please rate the training received by this individual in the following technical skill areas. Please respond only to those areas you feel are applicable to the occupational area.

<table>
<thead>
<tr>
<th>Area</th>
<th>Very Good</th>
<th>Good</th>
<th>Average</th>
<th>Poor</th>
<th>Very Poor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mathematical skills</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Technical knowledge</td>
<td>4</td>
<td>5</td>
<td></td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>Organizational ability</td>
<td>7</td>
<td>8</td>
<td></td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>Communication skills</td>
<td>10</td>
<td>11</td>
<td></td>
<td>12</td>
<td></td>
</tr>
<tr>
<td>Problem solving skills</td>
<td>13</td>
<td>14</td>
<td></td>
<td>15</td>
<td></td>
</tr>
<tr>
<td>Work quality</td>
<td>16</td>
<td>17</td>
<td></td>
<td>18</td>
<td></td>
</tr>
<tr>
<td>Work quantity</td>
<td>19</td>
<td>20</td>
<td></td>
<td>21</td>
<td></td>
</tr>
<tr>
<td>Manual dexterity</td>
<td>22</td>
<td>23</td>
<td></td>
<td>24</td>
<td></td>
</tr>
<tr>
<td>Meeting the public</td>
<td>25</td>
<td>26</td>
<td></td>
<td>27</td>
<td></td>
</tr>
<tr>
<td>Following instructions</td>
<td>28</td>
<td>29</td>
<td></td>
<td>30</td>
<td></td>
</tr>
<tr>
<td>Operation of equipment</td>
<td>31</td>
<td>32</td>
<td></td>
<td>33</td>
<td></td>
</tr>
</tbody>
</table>

As a result of this person's training, how would you rate his or her preparation in relation to other employees in his or her working group who did not receive such training?

- No basis for comparison
- Individual is better prepared
- Both are about the same
- Individual is less prepared

To what extent, if any, has this individual's training added to his or her ability for job placement and advancement?

- Very much
- Much
- Average
- Very little
- None

What was the primary source(s) for the initial hiring of this individual?

- Employment agency
- College faculty member
- College job placement office
- Mutual acquaintance
- Applicant applied on own initiative
- Other (describe)

What suggestions do you have for improving the technical and/or personal skills of future employees?

What, in your opinion, are additional areas of training (job titles, skills, etc.) in which our school should become involved?
The following is a career ladder for a student who is interested in pursuing a career in the area of forest technology. The 2+2 program provides for exit points at different levels with the job benefits and types of skills performed appropriate with the level of education attained. These jobs are only entry level jobs with promotions and benefit increases possible.

<table>
<thead>
<tr>
<th>EXIT LEVEL</th>
<th>JOB TITLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Higher Education</td>
<td>Forester</td>
</tr>
<tr>
<td>(Grade 16)</td>
<td>Lumber Mill Supervisor</td>
</tr>
<tr>
<td>Baccalaureate Degree</td>
<td>Lumber Sales Manager</td>
</tr>
<tr>
<td>Postsecondary</td>
<td>Forest Technician</td>
</tr>
<tr>
<td>(Grade 14)</td>
<td>Lumber Mill Assistant Foreman</td>
</tr>
<tr>
<td>Associate of Applied Science</td>
<td></td>
</tr>
<tr>
<td>Secondary (Grade 12)</td>
<td>Log Truck Driver</td>
</tr>
<tr>
<td></td>
<td>Heavy Equipment Operator</td>
</tr>
</tbody>
</table>
Secondary teachers who plan to initiate a 2+2 Agricultural Program in the area of Forest Technology should have the following qualifications:

1. The teacher should have a valid Texas Teacher Certificate with Agricultural Science and Technology certification.

2. The teacher should have attended forestry related workshops as approved by the Texas Education Agency.

3. It is not essential but is recommended that the teacher have taught within the last three years at the time of implementation of the 2+2 program or be a recent graduate (within the past 12 months) of an approved agricultural education program from a Texas college or university.
XV. ARTICULATION AGREEMENT

The following is an example articulation agreement to be signed by the secondary and postsecondary institutions who are interested in providing the agriculture 2+2 curriculum for their students.
AGRICULTURAL OCCUPATIONS 2+2+2 PROGRAM

ARTICULATION AGREEMENT

PURPOSE

1. To eliminate duplication of effort between area secondary and postsecondary educational institutions in the delivery of agriscience courses.

2. To optimize student enrichment by providing coordinated curriculum to insure a continuous learning path, beginning at the secondary level and continuing to the postsecondary level.

3. To assure that students are adequately equipped with the necessary academic and vocational skills to gain and hold employment upon graduation from both secondary and postsecondary levels.

AGREEMENT

1. Secondary institutions which are a party to this agreement hereby agree to:

   a. Evaluate and recruit students who have, in their opinion, necessary qualifications to successfully complete the Agricultural Occupations 2+2 or 2+2+2 Articulated Program.

   b. Offer and maintain for the duration of this agreement the agriscience courses designated as a part of the Agriculture 2+2+2 Articulated Program or a series of courses containing the same competencies.

   c. Maintain necessary records to track and evaluate individual student's progress of required agriscience competencies as contained in the Agricultural Occupations 2+2+2 Articulated Program. Such records will be forwarded to the postsecondary institution upon request.

2. The postsecondary institutions which are a party to this agreement hereby agree to:

   a. Assist secondary institutions which are a party to this agreement in evaluating and recruiting students.

   b. Offer and maintain for the duration of this agreement Applied and Associate Degree curriculum and resources as specified in the Agricultural Occupations 2+2 and 2+2+2 Articulated Program. No student will be allowed to enter the associate degree program without having first successfully completed the competencies required in the secondary portion of the Agricultural Occupations 2+2+2 Articulated Program.
c. Provide an adequately trained faculty to administer and teach the Agricultural Occupations Applied and Associate Degree curriculum.

d. Provide assessment of students upon entry to the postsecondary institution (students must score 80% or greater on materials covered in secondary program) and counsel students regarding the Applied vs the Associate Degree Programs.

e. Continue student records provided by secondary institutions; maintain adequate records during applied or associate degree program; and track student progress through at least one year of employment and provide to employers upon request.

REVIEW AND CHANGE PROCESS

At the end of one year from the date of this agreement, a review of the Articulation Agreement of the Agricultural Occupations 2+2+2 Articulated Program will be conducted. All superintendents, principals, counselors, vocational administrators, instructors from secondary schools, administrators and instructors from postsecondary schools, and industry representatives will be invited to provide input for review and revision.

PROVISION FOR IMPLEMENTATION/TERMINATION

This agreement will become effective upon approval by the President of __________________________ College and the Superintendent of Independent School District. Upon implementation, this agreement will continue on an annual basis until one of the parties petitions the other party to end the agreement.

Such petition to end the agreement (1) must be submitted one year in advance of the intent to terminate; (2) must be submitted in writing signed by the college president or school superintendent making the petition; and (3) must be delivered to the second party of the agreement. Delivery of the intent to terminate will constitute formal notification and will serve as grounds for termination one year following the date of delivery.

President __________________________ College __________________________

_____________________________ 1991  __________________________ 1991