

FORESTRY

Curriculum Content Framework

Please Note: All assessment questions will be taken from the knowledge portion of these frameworks.

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Curriculum Content Framework

FORESTRY

Grade Levels: 10, 11, 12

Course Code: 491260

Prerequisite: None

Course Description: Provides an overview of the forest industry and its importance to the national economy. Tree identification, management practices, business applications, and harvesting and marketing processes are major topics. GPS and GIS are included.

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Unit 1: Overview of Forestry

3 Hours

Terminology: Arkansas Forestry Commission, Career Development Event (CDE), Forest, Forestry, Hardwood, Softwood, Supervised Agriculture Experience (SAE), Timberland, Tree, Tree farm system

CAREER AND TECHNICAL SKILLS What the Student Should be Able to Do		ACADEMIC AND WORKPLACE SKILLS What the Instruction Should Reinforce		
Knowledge	Application	Skill Group	Skill	Description
1.1 Define terms	1.1.1 Match terms with definitions	Foundation	Reading	Applies/Understands technical words that pertain to the subject [1.3.6]
1.2 Discuss career opportunities relating to forestry	1.2.1 Research a career in forestry to determine educational requirements, working conditions, and salary	Foundation Personal Management	Listening Reading Career Awareness, Development, and Mobility	Listens for conversation [1.2.4] Locates pertinent information in documents – such as manuals, graphs, and schedules – to perform task [1.3.18] Uses standard occupational resource materials [1.3.22] Explores career opportunities [3.1.6] Identifies continuing changes in male/female roles at home and work [3.1.7]
1.3 Identify FFA activities that support an interest in forestry	1.3.1 Explore FFA, CDEs, and Proficiency award areas	Foundation Personal Management	Listening Reading Organizational Effectiveness	Listens for long-term contexts [1.2.7] Identifies relevant details, facts, and specifications [1.3.16] Uses written resources (books, dictionaries, directories) to obtain factual information [1.3.23] Identifies characteristics desired by organization [3.3.6]
1.4 Discuss the development of state and federal agencies dealing with forestry	1.4.1 Invite a guest speaker to address the class on state and federal agencies	Foundation Personal Management	Writing Organizational Effectiveness	Composes and creates documents – letters, manuals, reports, proposals, graphs, flow charts, etc. [1.6.8] Comprehends the organization's mode of operation [3.3.5] Identifies characteristics desired by organization [3.3.6]

Unit 2: Safety in Forestry

5 Hours

Terminology: Accident, Hazard, Material safety data sheet (MSDS), Risk, Safety

CAREER AND TECHNICAL SKILLS What the Student Should be Able to Do			ACADEMIC AND WORKPLACE SKILLS What the Instruction Should Reinforce		
Knowledge	Application	Skill Group	Skill	Description	
2.1 Define terms	2.1.1 Match terms to their definitions	Foundation	Reading	Applies/Understands technical words that pertain to subject [1.3.6]	
2.2 Discuss the meaning and importance of safety and safe work with forestry	2.2.1 Relate examples of safety hazards associated with forestry	Foundation	Reading	Distinguishes between fact and opinion [1.3.11]	
	2.2.2 Have students name examples of accidents that have occurred locally in forestry work		Speaking	Asks questions to obtain information [1.5.4]	
2.3 Identify hazards in forestry	2.3.1 Survey hazardous situations in local forestry facilities and prescribe the appropriate safety measures to be taken and propose ways of eliminating or reducing the risk of these hazards	Foundation	Reading	Analyzes and applies what has been read to specific task [1.3.2]	
					2.3.2 Develop a list of practices to reduce risk when working with forestry
2.4 Describe the importance of personal safety in forestry	2.4.1 Identify and properly use appropriate personal protective equipment (PPE) with forestry	Thinking	Problem Solving	Demonstrates logical reasoning in reaching a conclusion [4.4.2]	
	2.4.2 Calculate the cost of personal protective equipment (PPE) for an individual involved with forestry			Recognizes/Defines problem [4.4.8]	
	2.4.3 Work together with others to promote safety in forestry	Foundation	Arithmetic/Mathematics	Calculates dollar amounts [1.1.7]	
	2.4.4 Take a test on forestry safety before beginning work	Interpersonal	Negotiation	Works to resolve conflict between two or more individuals [2.5.3]	
2.5 Demonstrate safe use of a chainsaw	2.5.1 Pass a written test on the safe use of a chainsaw	Foundation	Reading	Analyzes and applies what has been read to specific task [1.3.2]	
	2.5.2 Demonstrate safe procedures for starting, operating, and storing a chainsaw.	Personal Management Skills	Integrity/Honesty/Work Ethic	Complies with safety and health rules in a given work environment [3.2.2]	

Unit 3: How Trees Grow 7 Hours

Terminology: Annual ring, Anther, Apical meristem, Cambium, Crown, Dioecious, Filament, Leaf, Meristem, Monoecious, Ovary, Ovule, Phloem, Photosynthesis, Pistil, Pollen, Respiration, Root, Seed, Sprout, Stamen, Stigma, Stomata, Style, Suckers, Transpiration, Trunk, Xylem

CAREER AND TECHNICAL SKILLS What the Student Should be Able to Do		ACADEMIC AND WORKPLACE SKILLS What the Instruction Should Reinforce		
Knowledge	Application	Skill Group	Skill	Description
3.1 Define terms	3.1.1 Match terms with definitions	Foundation	Reading	Applies/Understands technical words that pertain to the subject [1.3.6]
3.2 Discuss the parts of a tree and their functions (e.g., roots, stem, leaves, flowers, fruit)	3.2.1 Draw a tree and label the major parts	Foundation	Science	Acquires and processes scientific data [1.4.1]
	3.2.2 Prepare a short report on the functions of roots, stem, leaves, flowers, and fruit	Thinking	Writing Knowing how to Learn	Organizes information into an appropriate format [1.6.10] Locates appropriate learning resources to acquire or improve knowledge and skills [4.3.3]
3.3 Differentiate between xylem and phloem	3.3.1 Label a cross section of a tree trunk	Foundation	Science	Describes/Explains scientific principles related to tree growth [1.4.14]
	3.3.2 Determine the age of a tree by counting the annual growth rings.	Thinking	Writing Creative Thinking	Uses technical words and symbols [1.6.20] Creates new design by applying specified criteria [4.1.3] Applies personal style to a drawing [4.1.11]
3.4 Summarize the process of photosynthesis	3.4.1 Write the photosynthesis equation/formula	Foundation Thinking	Science Reasoning Seeing Things in the Mind's Eye	Describes/Explains scientific principles related to photosynthesis [1.4.14] Sees relationship between two or more ideas, objects, or situations [4.5.5] Organizes and processes images – symbols, pictures, graphs, objects, etc. [4.6.2]
3.5 Summarize the methods by which trees reproduce	3.5.1 Label the parts of a complete flower	Foundation	Science	Acquires and processes scientific data [1.4.1]
	3.5.2 Propagate trees asexually	Thinking	Writing Creative Thinking	Applies knowledge to complete a practical task [1.4.3] Uses technical words and symbols [1.6.20] Creates new design by applying specified criteria [4.1.3] Applies personal style to a drawing [4.1.11]
3.6 Describe processes by which trees enlarge in size (e.g., apical meristem, cambium)	3.6.1 Locate regions of growth on a tree and explain growth processes	Foundation	Science	Describes/Explains scientific principles related to tree growth [1.4.14]

Unit 4: Dendrology – The Identification of Trees 10 Hours

Terminology: Angiosperm, Dendrology, Gymnosperm, Lenticel, Margin, Petiole, Taxonomy

CAREER AND TECHNICAL SKILLS What the Student Should be Able to Do				ACADEMIC AND WORKPLACE SKILLS What the Instruction Should Reinforce		
Knowledge		Application		Skill Group	Skill	Description
4.1	Define terms	4.1.1	Match terms to their definitions	Foundation	Reading	Applies/Understands technical words that pertain to the subject [1.3.6]
4.2	Distinguish between the characteristics of angiosperms and gymnosperms	4.2.1	Collect cones and fruit of various trees for comparison	Foundation Thinking	Reading Reasoning	Adjusts reading strategy to purpose and type of reading (skimming and scanning) [1.3.1] Interprets drawings to obtain factual information [1.3.17] Sees relationship between two or more ideas, objects, or situations [4.5.5] Uses logic to draw conclusions from available information [4.5.6]
4.3	Describe the most important characteristics to use in identifying trees (e.g., bark, leaves, twigs, growth habit, fruit)	4.3.1	Collect leaves for branching and other identifying characteristics	Foundation	Speaking	Asks questions to clarify information [1.5.3] Asks questions to obtain information [1.5.4] Organizes ideas, and communicates oral messages to listeners [1.5.7]
4.4	Identify local trees	4.4.1 4.4.2	Collect leaves and twigs from 25 species of trees found in the local area, labeling them with both common and scientific names Identify trees in the local area	Foundation	Listening	Listens to follow directions [1.2.6] Receives and interprets verbal messages [1.2.8] Responds nonverbally to conversation [1.2.9]
4.5	Identify features of leaves that can be used for identification purposes	4.5.1	Label the parts of a leaf	Foundation Personal Management	Science Responsibility	Acquires and processes scientific data [1.4.1] Applies knowledge to complete a practical task [1.4.3] Pays close attention to details [3.4.8]

Unit 5: Measuring Land and Forest Products

10 Hours

Terminology: Acre, Board foot, Chain, Cord, Cruising, Cubic foot, Diameter breast height (DBH), Geographic information systems (GIS), Global positioning systems, Log rule, Merchantable height, Mile, Pace, Range line, Section, Surveying, Topographic map, Township, Township line

CAREER AND TECHNICAL SKILLS What the Student Should be Able to Do		ACADEMIC AND WORKPLACE SKILLS What the Instruction Should Reinforce		
Knowledge	Application	Skill Group	Skill	Description
5.1 Define terms	5.1.1 Match terms to their definitions	Foundation	Reading	Applies/Understands technical words that pertain to the subject [1.3.6]
5.2 Identify equipment used in surveying land	5.2.1 Identify equipment from catalog photos	Foundation	Reading	Identifies relevant details, facts, and specifications [1.3.16] Interprets drawings to obtain factual information [1.3.17]
	5.2.2 Locate an existing boundary using a compass			
5.3 Summarize methods of measuring horizontal distance	5.3.1 Practice measuring areas of land around the school	Foundation	Arithmetic/ Mathematics	Applies a mathematical formula to solve a problem [1.1.3] Uses basic geometric symbols, terms, principles, and formulas [1.1.34] Works effectively with others to reach a common goal [2.6.6]
	5.3.2 Practice pacing as a method of determining distance	Interpersonal	Teamwork	
5.4 Summarize the processes for obtaining diameter and merchantable height of trees	5.4.1 Demonstrate the ability to measure diameter at DBH, using a Biltmore stick	Foundation	Arithmetic/ Mathematics	Calculates different units of measurement [1.1.6] Calculates measurements taken from measuring devices [1.1.9] Comprehends ideas and concepts related to measurement [4.5.2] Helps others learn new skills [2.1.3]
	5.4.2 Demonstrate the ability to determine merchantable tree height, using a Biltmore stick	Thinking Interpersonal	Reasoning Coaching	
5.5 Compare methods of determining volume for pulpwood and saw-log timber	5.5.1 Estimate volumes for pulpwood and saw-log timber	Foundation Thinking	Arithmetic/ Mathematics Problem Solving	Comprehends mathematical ideas and concepts related to measurement of land and forest products [1.1.13] Uses calculator to solve mathematical problems [1.1.36] Demonstrates logical reasoning in reaching a conclusion [4.4.2] Recognizes/Defines problem [4.4.8]

CAREER AND TECHNICAL SKILLS What the Student Should be Able to Do			ACADEMIC AND WORKPLACE SKILLS What the Instruction Should Reinforce		
Knowledge	Application	Skill Group	Skill	Description	
5.6 Describe methods of cruising timber (e.g., partial cruise, 100% cruise)	5.6.1 Complete a cruise report for a given stand of timber	Foundation Thinking	Reading Problem Solving Writing Integrity/Honesty/ Work Ethic	Applies information to job performance [1.3.4] Comprehends written information, and applies it to a task [1.3.9] Devises and implements a plan of action to resolve a problem [4.4.3] Completes form accurately [1.6.7] Organizes information into an appropriate format [1.6.10] Writes appropriate entries [1.6.22] Chooses ethical course of action [3.2.1] Follows established rules, regulations, and policies [3.2.5]	
5.7 Describe how age and growth rate of trees can be determined using an increment borer	5.7.1 Determine age and growth rate of trees in the local area	Foundation	Science	Records measurements from common measuring devices [1.4.21] Uses equipment and techniques necessary for measuring age and growth rate of trees [1.4.24]	
5.8 Identify common topographic map symbols	5.8.1 Using a topographic map, identify the symbols on the map	Thinking	Seeing Things in the Mind's Eye	Organizes and processes images – symbols, pictures, graphs, objects, etc. [4.6.2]	
5.9 Describe the process of legal land description	5.9.1 Determine the legal description of a plot of land on a topographic map from a copy of a deed	Foundation Personal Management	Writing Integrity/Honesty/ Work Ethic	Organizes information into an appropriate format [1.6.10] Writes appropriate entries [1.6.22] Chooses ethical course of action [3.2.1] Follows established rules, regulations, and policies [3.2.5]	
5.10 Apply GPS technology to forest management	5.10.1 Use GPS to locate points of interest	Thinking	Problem Solving	Demonstrates logical reasoning in reaching a conclusion [4.4.2] Recognizes/Defines problem [4.4.8]	

Unit 6: Silvicultural Practices 10 Hours

Terminology: Clear-cutting, Entomology, Forest health, Girdling, Prescribed burning, Pruning, Rotation, Salvage cutting, Sanitation cutting, Selective cutting, Silviculture, Thinning

CAREER AND TECHNICAL SKILLS What the Student Should be Able to Do		ACADEMIC AND WORKPLACE SKILLS What the Instruction Should Reinforce		
Knowledge	Application	Skill Group	Skill	Description
6.1 Define terms	6.1.1 Match terms to their definitions	Foundation	Reading	Applies/Understands technical words that pertain to the subject [1.3.6]
6.2 Explain the purpose of intermediate cuttings (e.g., spacing, aging)	6.2.1 Visit a forest stand before and after intermediate cutting	Foundation	Reading	Adjusts reading strategy to purpose and type of reading (skimming and scanning) [1.3.1]
		Personal Management	Organizational Effectiveness	Applies knowledge to implement work-related system or practice [3.3.4]
6.3 List situations in which thinning would be prescribed	6.3.1 Mark trees to be cut in a plot	Foundation	Reading	Analyzes and applies what has been read to specific task [1.3.2] Applies information and concepts derived from printed materials [1.3.3] Comprehends written specifications, and applies them to a task [1.3.9]
		Thinking	Reasoning	Applies rules and principles to a new situation [4.5.1] Sees relationship between two or more ideas, objects, or situations [4.5.5]
6.4 Describe situations in which sanitation cuttings would be used	6.4.1 Visit local forest areas in need of sanitation cuttings	Foundation	Listening	Listens for content [1.2.3]
				Responds nonverbally to conversation [1.2.9]

Unit 7: Reforestation Methods 5 Hours

Terminology: Bare-root seedlings, Biomass, Coppice, Germination, Heeling-in, Monoculture, Plantation, Planting bar, Seedling survival, Spacing, Tree nursery

CAREER AND TECHNICAL SKILLS What the Student Should be Able to Do		ACADEMIC AND WORKPLACE SKILLS What the Instruction Should Reinforce		
Knowledge	Application	Skill Group	Skill	Description
7.1 Define terms	7.1.1 Match terms to their definitions	Foundation	Reading	Applies/Understands technical words that pertain to the subject [1.3.6]
7.2 Discuss methods of artificial reforestation	7.2.1 Plant tree seedlings and/or seeds	Foundation Thinking	Reading Knowing how to Learn	Applies information to new situations [1.3.5] Applies/Understands technical words that pertain to subject [1.3.6] Identifies relevant details, facts, and specifications [1.3.16] Develops personal learning strategies – notetaking, clustering related items, flash cards, etc. [4.3.2]
7.3 Identify sources of seedlings in your area (state nursery run by forest commission, soil and water conservation district, commercial nurseries)	7.3.1 Price seedlings with various suppliers	Foundation Personal Management	Listening Organizational Effectiveness	Listens for content [1.2.3] Responds nonverbally to conversation [1.2.9] Applies knowledge to implement work-related system or practice [3.3.4] Comprehends the organization's modes of operation [3.3.5]

CAREER AND TECHNICAL SKILLS What the Student Should be Able to Do		ACADEMIC AND WORKPLACE SKILLS What the Instruction Should Reinforce		
Knowledge	Application	Skill Group	Skill	Description
7.4 Describe protection measures for young plantings of seedlings (e.g., herbicides, fertilization, tillage)	7.4.1 Protect newly planted seedlings	Foundation Personal Management	Speaking Responsibility	Adapts presentation to audience [1.5.1] Applies/Uses technical terms as appropriate to audience [1.5.2] Organizes ideas, and communicates oral messages to listeners [1.5.7] Exerts a high level of effort and perseverance toward goal attainment [3.4.4] Maintains a high level of concentration in completion of a task [3.4.7]
7.5 Describe the process of natural reforestation	7.5.1 Visit a forest and show how the natural process of reforestation is taking place	Foundation	Speaking	Adapts presentation to audience [1.5.1] Applies/Uses technical terms as appropriate to audience [1.5.2] Organizes ideas, and communicates oral messages to listeners [1.5.7]

Unit 8: Harvesting and Marketing Forest Products

10 Hours

Terminology: Bucking, Chainsaw, Choker, Cooperage, Crosstie, Felling, Landing, Limbing, Logging, Piling, Plywood, Poles, Pulpwood, Saw timber, Skidder, Veneer, Yard

CAREER AND TECHNICAL SKILLS What the Student Should be Able to Do		ACADEMIC AND WORKPLACE SKILLS What the Instruction Should Reinforce		
Knowledge	Application	Skill Group	Skill	Description
8.1 Define terms	8.1.1 Match terms to their definitions	Foundation	Reading	Applies/Understands technical words that pertain to the subject [1.3.6]
8.2 Describe the principal uses of timber	8.2.1 Obtain examples of tree products	Foundation	Reading	Adjusts reading strategy to purpose and type of reading (skimming and scanning) [1.3.1] Determines what information is needed [1.3.10]
		Thinking	Seeing Things in the Mind's Eye	Organizes and processes images – symbols, pictures, graphs, objects, etc. [4.6.2]
8.3 Discuss the role of pulpwood in the forest industry	8.3.1 Visit a pulpwood mill to observe how the trees are processed	Foundation	Speaking	Asks questions to clarify information [1.5.3] Asks questions to obtain information [1.5.4] Responds to listener feedback [1.5.10]
		Personal Management	Integrity/Honesty/Work Ethic	Complies with safety and health rules in a given work environment [3.2.2] Follows established rules, regulations, and policies [3.2.5]
8.4 Identify timber markets (e.g., crossties, posts, poles, pulpwood, lumber, firewood)	8.4.1 Research the Internet to identify timber markets	Thinking	Knowing how to Learn	Locates appropriate learning resources to acquire or improve knowledge and skills [4.3.3]
	8.4.2 Invite a timber industry person to speak to the class on timber markets			

CAREER AND TECHNICAL SKILLS What the Student Should be Able to Do		ACADEMIC AND WORKPLACE SKILLS What the Instruction Should Reinforce		
Knowledge	Application	Skill Group	Skill	Description
8.5 Describe the range of technology used in logging operations (e.g., heavy equipment, tree cutting machines, chainsaws, mules)	8.5.1 List the advantages and disadvantages for the different technologies used in logging operations	Foundation	Writing	Presents answers/conclusions in a clear and understandable form [1.6.13] Uses technical words and symbols [1.6.20]
8.6 Compare the processes used for manufacturing lumber to those used for pulpwood	8.6.1 Prepare a report that compares the processes used for manufacturing lumber to those used for pulpwood	Foundation Personal Management	Reading Organizational Effectiveness	Comprehends written information for main ideas [1.3.7] Determines what information is needed [1.3.10] Applies knowledge to implement work-related system or practice [3.3.4] Comprehends the organization's modes of operation [3.3.5]

Glossary

Unit 1: Overview of Forestry

1. Arkansas Forestry Commission — state agency responsible for forest fire control, operation of nurseries, management of state forest, assistance to landowners, and education to the public
2. Career Development Event (CDE) — an activity sponsored by the FFA offering members an opportunity to display competencies gained in agriculture education classes
3. Forest — a living community of trees and associated plants and animals
4. Forestry — the art and science of managing forests to continuously provide a maximum quality and quantity of forest product and services
5. Hardwood — a group of deciduous trees with broad leaves
6. Softwood — a group of evergreen trees with needle or scalelike leaves
7. Supervised Agriculture Experience (SAE) — a program (production, experience, cooperative, or directed lab) operated by an FFA member
8. Timberland — forest land capable of producing wood and not restricted from harvesting
9. Tree — a woody single-stem plant attaining a height of at least 8 feet when mature
10. Tree farm system — a program recognizing landowners practicing sound forest management

Unit 2: Safety in Forestry

1. Accident – an event that happens unexpectedly or unintentionally
2. Hazard – exposure to danger or harm
3. Material safety data sheet (MSDS) – a sheet containing information about the safe use and a chemical and the steps to take in case of an accident
4. Risk – the chance that an accident might occur during a research project
5. Safety – a state of being free of danger and injury

Unit 3: How Trees Grow

1. Annual ring — the layer of one year as viewed from a cross section of stem, branch, or root
2. Anther — produces pollen
3. Apical meristem — tissue found at the tips of roots and at the ends of stems responsible for the increase of the length of a plant
4. Cambium — the layer of cells between phloem and xylem responsible for diameter growth of tree
5. Crown — the upper portion of tree, consisting of branches and leaves
6. Dioecious — a class of trees in which the male and female flowers are produced on separate plants
7. Filament — the stalk of stamen
8. Leaf — the food-manufacturing part of plant; made up of blade and petiole
9. Meristem — specialized areas where growth occurs
10. Monoecious — a class of trees in which the male and female flowers are located on same plant
11. Ovary — the female part of flower that, when ripe, produces fruit
12. Ovule — the part of ovary that, when ripe, comprises the seed of the fruit
13. Phloem — living cells, sometimes called inner bark, responsible for carrying food to branches, leaves, and roots
14. Photosynthesis — the process by which plants produce glucose
15. Pistil — the female reproductive part of flower
16. Pollen — the male sex cell
17. Respiration — the process in which living organisms consume oxygen and carbohydrates to produce energy
18. Root — the structure responsible for water, nutrient absorption, and anchoring of the tree
19. Seed — a fertilized ovule
20. Sprout — new growth from the stump of the tree

21. Stamen — the male part of flower
22. Stigma — the sticky end of pistil
23. Stomata — a pore in plant leaf allowing for the exchange of gases
24. Style — the tube through pistil in which pollen passes
25. Suckers — new growth from underground roots
26. Transpiration — the process by which water vapor leaves a living plant
27. Trunk — the primary stem of tree
28. Xylem — the living portion of tree, sometimes called sapwood, responsible for carrying water and dissolved nutrients from roots to crown

Unit 4: Dendrology – The Identification of Trees

1. Angiosperm – a class of trees made up of broadleaf species
2. Compound leaf – a type of leaf that consists of a petiole and two or more leaf blades called leaflets
3. Dendrology – identification of trees
4. Gymnosperm – a class of tree made up of cone-bearing species
5. Leaf arrangement – the position of leaves along the stem, commonly opposite, alternate, or whorled
6. Lenticel – a breathing pore located on stem
7. Margin – the edge of the blade of the leaf
8. Petiole – the stem of the leaf
9. Simple leaf – a type of leaf that consists of a petiole and a single leaf blade
10. Taxonomy – a classification method for trees, plants, and animals using scientific names and Latin terminology

Unit 5: Measuring Land and Forest Products

1. Acre — 43,560 sq. ft. or 10 square chains
2. Board foot — a piece of lumber 12 inches long x 12 inches wide and 1 inch thick or 144 cubic inches
3. Chain — a distance measuring 66 feet
4. Cord — 128 cubic feet or a stack of wood 4 feet x 4 feet x 8 feet
5. Cruising — estimating volume of standing timber
6. Cubic foot — a volume 12 inches x 12 inches x 12 inches
7. Diameter breast height (DBH) — the measurement of the diameter of a tree from 4½ feet above ground on the uphill side
8. Geographic information systems (GIS) — a system for capturing, storing, analyzing, and managing data which are spatially referenced to Earth
9. Global positioning systems (GPS) — methods used to connect orbiting satellites and a ground receiver to locate exact points
10. Log rule — a table showing estimated or calculated amount of lumber from logs
11. Merchantable height — the marketable length of tree
12. Mile — 5,280 linear feet
13. Pace — a measured distance equaling two steps
14. Range line — the east-west location of a township from a principal meridian
15. Section — 640 acres or a 1-mile square
16. Surveying — the measurement of dimensional relationships such as horizontal distances, elevations, directions, and angles, on the earth's surface
17. Topographic map — map depicting terrain relief showing ground elevation with the use of contour lines or spot elevations
18. Township — 36 sections or 36 square miles or a 6-mile square
19. Township line — the north-south location of a township from a base line

Unit 6: Silvicultural Practices

1. Clear-cutting — the removal of all trees in the stand
2. Entomology — the science and study of insects
3. Forest health — the general condition or state of a forest
4. Girdling — encircling the trunk of a living tree with cuts that sever the bark and cambium
5. Prescribed burning — the application of fire to land under correct conditions to accomplish a purpose
6. Pruning — the removal of unwanted branches of a tree
7. Rotation — the period of years required to establish and grow timber to maturity
8. Salvage cutting — the harvesting of trees that have been damaged by injurious agents
9. Sanitation cutting — the removal of trees infested with insects or attacked by diseases to save the rest of the stand
10. Selective cutting — the removal of mature timber at different intervals in an uneven, aged forest to maintain production
11. Silviculture — the art of producing and tending forests
12. Thinning — cutting in an immature stand to increase rate of growth and improve quality

Unit 7: Reforestation Methods

1. Bare-root seedlings — seedlings that are grown in a nursery and transported without soil
2. Biomass — the weight of a complete tree, including roots, stump, stem, and crown
3. Coppice — a method of reproduction from stumps of harvested trees
4. Germination — the process by which a seed sprouts and begins to grow
5. Heeling-in — a method of storing seedlings prior to planting by placing the seedlings in a trench and covering the roots with soil
6. Monoculture — a population that consists of a single species or variety
7. Plantation — an artificially reforested area established by planting or direct seeding
8. Planting bar (dibble) — a hand tool used in making a hole in the soil where a tree can be planted
9. Seedling survival — the percent of properly planted seedlings that survive
10. Spacing — the distance in feet between seedlings
11. Tree nursery — an area in which young trees are grown for forest planting

Unit 8: Harvesting and Marketing Forest Products

1. Bucking — cutting felled and limbed trees into suitable lengths
2. Chainsaw — a gasoline-powered saw used in logging operations
3. Choker — a cable fastened around log to transport it to the yard or landing
4. Cooperage — a container consisting of staves held together with hoops (slack or tight)
5. Crosstie — a cross member supporting railroad rails
6. Felling — cutting or severing the tree from the stump
7. Landing — a site where logs are gathered to haul them to a sawmill (also known as yard)
8. Limbing — the process of removing limbs from logs during harvesting
9. Logging — the process of harvesting trees
10. Piling — a round timber driven in ground to support other structures
11. Plywood — a laminated wood product made of several sheets of veneer and lesser quality wood bonded with adhesives
12. Poles — timbers in the round usually used to support power or telephone lines
13. Pulpwood — wood used primarily for the product of pulp, paper, or fiberboard
14. Saw timber — trees that yield logs of suitable size and quality for lumber
15. Skidder — machinery used to pull logs from the stump to the landing
16. Veneer — thin sheets of wood glued to lesser quality wood used in furniture manufacture
17. Yard — a site where logs are gathered to haul them to a sawmill (also known as landing)