



# **National FFA Career Development Events**

*A Special Project of the  
National FFA Foundation*

# National FFA Career Development Events

## General Information

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These are the official rules and regulations for National FFA Career Development Events for 2012-2016. Refer to the CDE webpage on [ffa.org](http://ffa.org) for the most up-to-date edition of the career development event handbook.

Prepared and published by the National FFA Organization. The National FFA Organization is a resource and support organization that does not select, control or supervise state association, local chapter or individual member activities except as expressly provided for in the National FFA Organization Constitution and Bylaws. The National FFA Organization affirms its belief in the value of all human beings and seeks diversity in its membership, leadership and staff.

FFA makes a positive difference in the lives of students by developing their potential for premier leadership, personal growth and career success through agricultural education. National FFA Online, [www.ffa.org](http://www.ffa.org), FFA's Internet web site, can provide information about the National FFA Organization.

## **Philosophy of National FFA Career Development Events**

The National FFA Organization is dedicated to organizing experiences that will meet the future needs of students while accomplishing the current purposes of agricultural education. The primary goal of career development events is to develop individual responsibilities, foster teamwork and promote communication while recognizing the value of ethical competition and individual achievement.

The activities in each career development event:

- include problem solving, critical thinking and teamwork skills, where appropriate.
- encourage appreciation for diversity by reducing barriers to participation among members.
- develop general leadership and recognize individual and team achievement.
- promote concentrated focus on future needs of members and society.

The National FFA Organization assumes the leadership role in developing and continuously improving relevant FFA career development events. National career development events should reflect instruction that currently takes place in the entire agricultural education program, including classroom instruction, laboratory instruction, individualized instruction and/or supervised agricultural experience. Career development events and awards are intended to be an outgrowth of instruction. Also, it is appropriate for the national organization to develop career development events and awards that stimulate instruction in emerging areas that reflect both current and future community, national and global work force needs. National FFA Career Development Events should be developed with significant input from FFA members, teachers, partners, respective industry sponsors and others involved in agricultural education. The National FFA Organization continues to encourage accessibility and provide opportunities for achievement and recognition for students with diverse backgrounds.

Career development events that include team activities should be based on cooperation and teamwork while recognizing the value of competition and individual achievement. Where appropriate, team activities will be included that require two or more members from one chapter working cooperatively.

## **Agriculture, Food and Natural Resources (AFNR) Career Cluster Content Standards**

Agriculture is a highly technical and ever-changing industry upon which everyone is dependent. In order to maintain agriculture as the nation's number one industry, it is crucial to understand the importance of agrisciences, marketing strategies, safe food production and continuous research. Strong, relevant agriscience programs are one way to can maintain the nation's agricultural edge.

The National AFNR Career Cluster Content Standards were developed as part of the National FFA 10 x 15 project to provide state agricultural education leaders and teachers with a forward-thinking guide for what students should know and be able to do through the study of agriculture. The National AFNR Career Cluster Content Standards should be used as a guide to develop well-planned curriculum in agriscience education to be delivered to students throughout the country. For a complete copy of the AFNR Career Cluster Content Standards please visit [www.agedlearning.org](http://www.agedlearning.org).

National FFA Organization has adopted the AFNR Career Cluster Content Standards and integrated them into all national award and recognition programs for the benefit of the members, school administration and agriculture as a whole. Details outlining the incorporation of the standards in career development events can be found at the end of each event chapter in the CDE handbook.

## Official CDE Rules and Policies – 2012-2016

### General Rules

Violations of any of the following rules may be grounds for the event superintendent to disqualify the participants. National FFA staff and event superintendents will use the published rules and procedures to organize and implement the National FFA Career Development Events. Event activities may not be conducted due to lack of necessary materials, expertise or extreme impact to event budgets. Teams that are certified to compete will receive the current event format in a team orientation packet prior to the convention.

### Official Dress Recommendations, Number of Participants and Number of Scores for Team Total

Event	Official Dress Appropriate	Number of Participants Allowed (per team)	Number of Scores Counted for Team Score
Agricultural Communications	Yes	3	3
Agricultural Issues Forum	Optional	3-7	Team Score Event
Agricultural Technology and Mechanical Systems	No	4	Top 3 Scores
Agricultural Sales	Yes	4	4
Agronomy	Yes	4	4
Creed Speaking	Yes	1	N/A
Dairy Cattle Management and Evaluation	Yes	4	4
Dairy Cattle Handlers	Yes	1	N/A
Environmental and Natural Resources	No	4	4
Extemporaneous Public Speaking	Yes	1	N/A
Farm Business Management	Yes	4	Top 3 Scores
Floriculture	Yes	4	4
Food Science and Technology	Yes	4	4
Forestry	No	4	4
Horse Evaluation	Yes	4	Top 3 Scores
Job Interview	Yes	1	N/A
Livestock Evaluation	Yes	4	4
Marketing Plan	Yes	3	Team Score Event
Meats Evaluation and Technology	No	4	Top 3 Scores
Milk Quality and Products	Yes	4	4
Nursery/Landscape	Yes	4	Top 3 Scores
Parliamentary Procedure	Yes	6	Team Score Event
Poultry Evaluation	Yes	4	Top 3 Scores
Prepared Public Speaking	Yes	1	N/A
Veterinary Science	No	4	4

### Eligibility of Participants

- A. Each participant must be a current, bona fide, dues paying FFA member in good standing with the local chapter, state FFA association and the National FFA Organization during the school year which the participant qualified to participate at the national level.
  - 1. In the event a participant's name is not on the chapter's official roster for the years in which the dues were payable to the National FFA Organization, a past due membership processing fee, in addition to the dues, must be paid prior to the national event.
  - 2. National FFA membership staff will set the processing fee amount annually.
- B. The participant, at the national event, must:
  - 1. Be a high school FFA member; high school refers to grades 9-12. (A graduating senior is considered eligible to compete in state and national career development events up to and including his/her first national convention following graduation.)
  - 2. Have qualified as a 7th, 8th or 9th grade member to participate in the Creed speaking event.
  - 3. While in high school, be enrolled in at least one agricultural education course during the school year and/or follow a planned course of study; either course must include a supervised agricultural experience program, the objective of which is preparation for an agricultural career.
  - 4. If a student moves to a different chapter or a different state once a he/she has qualified as a state representative in a career development event, that student may be allowed to compete in the national event with the school he/she qualified with during the qualifying year.
- C. A student may not participate more than once in the same official National FFA Career Development Event.
- D. No student may participate in more than one National FFA Career Development Event each year.
- E. Each member participating in a National FFA Career Development Event must submit the proper *Waiver, Release of Liability and Consent to Medical Treatment Form* prior to start of event.

### Selection and Certification of State Teams

- A. Each state will submit a team declaration form by **June 1** prior to the national FFA convention. An entry processing fee will be charged for participation in each declared event with the exception of the dairy cattle handlers activity.
- B. Each team will be composed of the number of members determined by the specific event rules and formats. The members of a state team must be from the same chapter. Members must qualify in the career development event in which they are to participate at the national level. Teams must be selected at a state or interstate career development event held between the immediate previous national FFA convention and prior to the national FFA convention in which they are participating. States that qualify more than one year out must request and submit a written waiver for approval by the certification deadline.
  - 1. Online certification deadline: **September 15**.
  - 2. Online add/delete deadline: **Tuesday before convention at noon (Eastern)**.
- C. With extenuating circumstances a teacher may substitute another student from the chapter who may not have participated at a state qualifying event, with the exception of Creed speaking, dairy handlers activity, extemporaneous public speaking, job interview and prepared public speaking, which must be submitted and approved by state staff.

- D. The state supervisor of agricultural education or the executive secretary must certify that participants are eligible. If an ineligible student participates in any career development event, the member will be disqualified and may result in the disqualification of the team as well.
- E. All students must be certified online by the designated deadline. Once original certification has been completed, no member may be added without first deleting a member.
- F. The national organization will certify National FFA Career Development Event winners for international competition when states request, with the understanding that the state team will provide their own travel expenses.

### **Emergency Conditions**

Under emergency conditions a state team participating in a National FFA Career Development Event may be made up of less than the required members. States must still certify teams prior to the national FFA convention, but fewer than the required members could compete if an emergency condition such as illness, death in the family or an act of God would occur. Those individuals competing would still be eligible to qualify for individual awards, if applicable.

### **Disqualification**

- A. Any communication, verbal or non-verbal, between participants during a career development event will be sufficient cause to eliminate the team member involved from the career development event. The only exception to this would be communications between team members during the team activity portion of a given career development event.
- B. Teams or participants arriving after the career development event has begun may be disqualified or penalized.
- C. Any assistance given to a team member from any source other than the career development event officials or assistants will be sufficient cause to eliminate the team from the career development event.
- D. Event superintendents may stop any participant if they deem their manner to be hazardous either to themselves or others. Such action shall deem the individuals disqualified for that section of the career development event.
- E. Participants who start an event and do not complete the event without notifying event officials at the time of departure will be disqualified. This can affect the overall team rank and position. In some events this will also disqualify the entire team.
- F. Participants will not be allowed to utilize personal electronic communication devices, other than those approved by the event officials, during the entire course of the event. Participants who access personal electronic communication devices without prior approval of the event officials will be disqualified.
- G. No participant shall gain access to real materials that will be utilized by the event committee during competition. Any team, participant, advisor or coach reported and proven to do so will be disqualified from the national event.

### **Additions/Deletions of National Events**

- A. National FFA staff is expected to be proactive in developing new or initiating changes within existing career development events to ensure that they meet the needs of FFA members.
- B. If fifteen (15) state supervisors/executive secretaries develop a proposal for a new career development event, the national FFA staff will conduct a study for the validity of the career development event and make a recommendation to the chief executive officer. Representatives of these states must be from each of the FFA regions. The same process may be used to eliminate a national career development event.
- C. Three years following the initiation of a new career development event, at least fifteen (15) states should be participating. After the next three-year period, at least twenty-six (26) states should be participating in order to retain the event at the national level.

### **Rules Committee/Scoring Appeals Process**

- A. If a written appeal is filed within the seven (7) calendar days after results announcement, national CDE staff will review the appeal. Upon receiving input from team leader and division director, national CDE staff will accept or deny the appeal. The national CDE staff's recommendation will be shared with appeals committee and National FFA Chief Executive Officer for further input, if necessary.
  1. The written appeal must be filed with the Education Division staff responsible for scoring career development events within seven (7) calendar days of the results announcement and accompanied by a \$50 filing fee. The fee will be returned if the appeal is justified.
- B. The appeals committee will be chaired by the National FFA Awards, Recognition and Career Development Events Advisory Committee chairperson who will in turn appoint a representative of each of the following organizations: National Association of Supervisors of Agricultural Education (NASAE), National Association of Agricultural Educators (NAAE) and the American Association for Agricultural Education (AAAE). The National FFA staff responsible for career development events will also serve on the committee.

### **Waiver of FFA Rules**

Any local chapter seeking a waiver of a National FFA policy or procedure must submit in writing to the chapter's state FFA association office. If the request is approved at the state level, it must be forwarded, under the signature of the state advisor or executive secretary, to the career development events education specialist. After study by the appropriate FFA staff, a recommendation to grant or deny the appeal will be forward to the chief executive officer for his/her approval. The request must be submitted to the national FFA staff at least 30 days prior to the scheduled event or due date for which the waiver is requested. This policy does not supersede any current FFA policy for appeals already established for a particular FFA program.



### **Selection of CDE Superintendents and CDE Committee Members**

- A. Nominations for CDE superintendents may come to National FFA staff from the following sources:
  - 1. standing CDE superintendent
  - 2. current CDE committee members
  - 3. state leadership
  - 4. Team Ag Ed partners
- B. CDE superintendents will be selected by national CDE staff and approved by the National FFA Chief Executive Officer.
- C. Each CDE superintendent will serve a three to five year term. At the end of the superintendent's term, a qualified replacement will assume the duties of superintendent.
- D. National FFA staff and CDE superintendents will select qualified individuals to serve on CDE committees. Selection of committee members will be based on:
  - 1. individual qualifications.
  - 2. recommendations from state leaders, current CDE committee members, CDE superintendents or National FFA staff.
  - 3. recommendations from Team Ag Ed partners.
  - 4. current rotational procedures developed by each CDE committee.
  - 5. provide diversity for the committee.
  - 6. commitment to serve a minimum of three years on the committee.
- E. Final approval of new committee members is the responsibility of the National FFA CDE staff with input and recommendations from CDE event superintendent and committee.

### **Sanctioning Events**

Sanctioning of non-national FFA competitive events (those competitive events conducted by organizations other than the National FFA Organization) as National FFA Career Development Events should occur when:

- 1. The highest quality event possible is conducted.
- 2. Organization conducting event and National FFA Organization agree that event can and should be sanctioned.
- 3. Event is recommended by the National FFA Staff responsible for CDEs with input and agreement from the Award and Recognition Advisory Committee and approved by the National FFA Chief Executive Officer.
- 4. National FFA is represented by staff responsible for career development events on the planning and implementation committee for each event.
- 5. Winners of the national sanctioned event will be recognized in the same manner as national career development events winners are currently recognized.

### **Official Dress**

Participants are expected to observe the National FFA Code of Ethics and the proper use of the FFA jacket during career development events. (Please reference the latest edition of the Official FFA Manual.) Official FFA dress is highly recommended for all participants where appropriate and is required for the awards presentation and recognition.

### **Accessibility for All Students**

All special needs requests and appropriate documentation as outlined in the special needs request policy must be submitted at time of certification.

- 1. Special needs policy is posted on the CDE program page at [www.ffa.org/cde](http://www.ffa.org/cde)
- 2. Special needs request due: **August 15**

**Written Document Penalties**

A penalty of 10% of the total points allotted will be assessed for the written documents received after the postmarked deadline. If the document is still not received seven days after the postmarked deadline, the team/individual may be subject to disqualification.

1. National staff will mark late entries as such.
2. Event officials will be notified of late entries at the time written documents are provided for judging.
3. Event superintendent will ensure that penalty is applied.

# National FFA Forestry Career Development Event

## A Special Project of the National FFA Foundation

### Important Note

*Please thoroughly read the Introduction Section at the beginning of this handbook for complete rules and procedures that are relevant to all National FFA Career Development Events.*

### I. Purpose

The National FFA Forestry Career Development Event is designed to stimulate student interest and to promote forestry instruction in the agricultural education curriculum and to provide recognition for those who have demonstrated skills and competencies as a result of forestry instruction.

### II. Objectives

- A. Ability to understand and use forestry terms.
- B. Ability to promote an understanding of the economic impact of the forest environment and the forest industry to the American economy.
- C. Ability to recognize sustainability (multiple use) opportunities in the forests.
- D. Ability to recognize environmental and social factors affecting the management of forests.
- E. Ability to identify major species of trees of economic importance to the United States and internationally.
- F. Ability to identify hand tools, equipment and their uses in forestry management.
- G. Ability to recognize and understand approved silvicultural practices in the United States.
- H. Ability to identify forest disorders.
- I. Ability to take a forest inventory.
- J. Ability to utilize marketing management strategies.
- K. Ability to recognize safety practices in forest management:

### III. Agriculture, Food and Natural Resources (AFNR) Career Cluster Content Standards

With the recommendation of the National FFA Board of Directors, all national FFA programs have incorporated these standards to guide the direction and content of program materials and activities. Refer to Appendix A in this chapter of the handbook for a complete list of the measurable activities that participants will carry out in this event. For details about the incorporation of AFNR standards, refer to the Introduction chapter of the CDE handbook.

### IV. Event Rules

- A. The team will consist of four individuals and **all four scores will count** toward the team score. The team score is comprised of the combined scores of each individual and the team activity in which all team members will participate.
- B. **Participants must come to the event prepared to work in adverse weather conditions.** The event will be conducted regardless of weather. Participants should have rain gear, warm clothes and proper footwear. Each participant must provide the following safety equipment, and it must be worn while in the woods or the participant will be disqualified:
  - 1. Hard Hat
  - 2. Safety Glasses

- C. All other equipment including clipboard and pencils will be furnished for the event. Participants must use the tools and equipment provided.
- D. Participants must follow instructions from event staff for handling materials during the event. Any infraction of this rule will be sufficient to eliminate the team from the event.
- E. Observers will not be permitted in the event area while the event is in progress.
- F. No team, team member or team coach shall visit the event facilities to observe plant materials and facilities after September 1. Any team, team member or coach reported and proven to do so will cause the elimination of the team from the National FFA Forestry CDE.
- G. Participants will be assigned to group leaders who will escort them to various event-staging sites. Each participant is to stay with his/her assigned group leader throughout the event or until told to change leaders by the event superintendent.
- H. All participants will be given an identification number by which they will be designated throughout the event.
- I. Written Materials: All written materials will be furnished for the event. No written materials such as tests, problems and worksheets shall be removed from the event site.
- J. Any participant in possession of an electronic device in the event area is subject to disqualification.

## V. EVENT FORMAT

### A. Individual Activities

1. General Knowledge Exam - 100 points
  - a. Fifty (50) multiple-choice questions will be selected from areas of the forestry industry reflected in the event objectives. This phase of the event will test the participant's knowledge and understanding of basic principles of forestry.
  - b. Time: Each participant will be allowed 45 minutes to complete this phase of the event.
  - c. Scoring: Each answer has a value of 2 points for a total maximum score of 100 points.
2. Forestry Issues Interview - 100 points
  - a. Participants will communicate their knowledge and opinion about national or regional forestry issues through a personal interview with a judge. A list of general issue topics for participants to study will be provided prior to convention. The specific topic will be provided at the event.
  - b. Time: Each participant will have ten minutes to prepare and be allowed ten minutes to complete the interview.
  - c. Scoring: Scoring criteria are presented on the issues interview score card, which will be recorded by a judge.
3. Tree Identification - 100 points
  - a. Twenty (20) live specimens, pressed samples, fresh leaf samples and/or standing trees, from the list below will be displayed for participants to identify by common names. A number will designate each specimen.
  - b. Time: Each participant will be allowed 30 minutes to complete this phase.
  - c. Scoring: Five points will be given for each specimen that is correctly identified for a maximum of 100 points.
4. Tree Measurement—Timber Cruising for Board Volume - 100 points
  - a. Using the provided tree measurement tools, each participant will measure ten pre-numbered trees on a plot for board foot volume. The participant must record the DBH (Diameter Breast Height) to the nearest one-inch class and the merchantable height of each tree height rounded down to the nearest  $\frac{1}{2}$  log. Volume tables will be provided at the event.

- b. The following minimum diameters and log length will be:

***Minimum Saw Timber***

DBH	10 inches
Top Diameter	10 inches DIB
Height	16 feet

- c. Merchantable height stops are estimated to the upper point on a tree where it becomes 10 inches in diameter or where a major fork in a tree stem occurs or where a limb has a diameter equal to  $\frac{1}{2}$  of the diameter of the tree at that point.
- d. Time: Each participant will be allowed 30 minutes to complete this phase.
- e. Scoring: Thirty points will be given for the correct DBH and thirty points for the correct height. Forty points will be given for the correct volume per acre. Five points will be deducted for each 5 percent deviation (plus or minus) from the correct measured volume.
- B. Individual Practicums - 100 points each for total of 200 points per individual  
Participants will compete individually in two practicums from the following list. The event superintendent will designate two practicums to be completed by the participant. Each participant will have 30 minutes to complete each practicum.
1. Forest Management Evaluation - Timber Stand Improvements (TSI) and/or Thinning Practicum
- The trees selected and designated for use in this part of the event may be all of one species or a mixture of species.
  - An area will be selected and identified by ribbons, paint, rope, etc. It will contain 20 marked trees within a timber stand that needs thinning or some TSI work. All trees in the selected area will be considered as a forest management site, and the participants will score each marked tree using one of the following options:
    - Harvest - utilize the tree
    - Leave - the tree should remain in stand for a good reason
    - Deaden - Undesirable tree, not merchantable or beneficial to wildlife, should be deadened or cut down and left in woods
  - The participants will be given a situation concerning the forest management objectives of the stand selected. This information will be given to participants at the site before they start. Information that will be needed to help participants in their decisions will include:
    - Markets available
    - Wildlife considerations
    - Present condition of stand
    - Management plan
  - Scoring: A total of 100 points are possible for this practicum.
2. Equipment Identification Practicum
- Twenty-five (25) pieces of equipment from the list below will be displayed for participants to identify by technical names. Each piece of equipment will be designated by number.
  - Time: Each participant will be allowed 30 minutes to complete this phase.
  - Scoring: Four points will be given for each piece of equipment identified correctly for a total of 100 points.

3. Map Interpretation Practicum
  - a. Participants will answer questions using a furnished United States Geological Survey topographic map. The participant should know legal description, recognize topographic map symbols, understand the meaning of map symbols, size and location of 40 acres or more in a parcel.
  - b. Examples:
    - i. What is the legal description of the boxed area?
    - ii. What is the item located at this point?
    - iii. What is the acreage of the area enclosed?
    - iv. In what section is the city of Marshall located?
    - v. What is the elevation at this point?
  - c. Legal descriptions will be written or described according to the public land survey system.
  - d. Example: SE  $\frac{1}{4}$  of NW  $\frac{1}{4}$  of Section 3, T3N, R1E
4. Compass Practicum
  - a. The participant will use a hand compass and pacing to the nearest full foot to simulate the determination of the property lines on a tract of timber. The participant will start at any point and record the compass reading and distance to the next point. Azimuth readings shall be recorded.
  - b. Scoring: A total of 100 points are possible for this practicum. Partial credit will be given with a deduction of one point for each two degrees or two feet the participant is off the correct answer.
5. Chainsaw Part Identification, Troubleshooting and Safety Practicum
  - a. This practicum will consist of one or more of the parts below. Parts may utilize photos, video, demonstration, actual parts, written situations and/or problems. This is not an inclusive list.
    - i. Chainsaw parts identification- Each participant will identify parts of a chainsaw.
    - ii. Troubleshooting - The participant will identify chainsaw problems or troubles.
    - iii. Safety - The participant will identify safety hazards or unsafe practices.
  - b. Scoring: A total of 100 points are possible for this practicum.
6. Tree/Forest Disorders Practicum
  - a. Symptoms of at least ten (10) and not more than twenty (20) disorders from the list at the end of this chapter will be displayed for participants to identify by common names. The symptoms will be presented in one or more of the following forms:
    - i. Actual sample
    - ii. Pictures/slides
    - iii. Written description
    - iv. Written case history
  - b. A number will designate each set of symptoms representing a disorder.
  - c. Scoring: A total of 100 points are possible for this practicum.

### 7. Forest Products Practicum

- a. Ten (10) to twenty (20) wood products/samples will be displayed for participants to evaluate and identify its tree species source from the tree identification specimen list. The wood products/samples will be presented in one or more of the following forms:
  - i. Actual Sample
  - ii. Pictures/slides
  - iii. Written description
- b. Scoring: This will be a multiple-choice practicum. A total of 100 points are possible for this practicum.

### 8. Forest Business Management Problem Practicum

- a. This section is designed to determine the participant's ability to apply economic principles and concepts of management to the decision making process by actual problem analysis and to defend the decisions made. This will involve a model forest operation with possible calculation on profit/loss, cost of operation, taxes, depreciation, marketing product, stumpage cost, record keeping, etc. The exact problem may or may not be in a listed reference. A maximum of ten problems or questions will be used.
- b. Scoring: A total of 100 points are possible for this practicum.

### C. Team Activity - 450 points

Each team will be provided with a forest industry scenario. The scenario will utilize components from the individual forestry CDE practicums. Teams must work together using forestry skills and tools to complete the team activity. Ninety (90) minutes will be allowed to plan and complete the activity. All supplies and materials needed to complete the task will be provided.

## VI. Scoring

Phase	Individual Points	Team Points
General Knowledge Exam .....	100	400
Tree Identification.....	100	400
Issues Interview .....	100	400
Timber Cruising.....	100	400
Forestry Practicums (2).....	200	800
Team Activity .....	0	450
<b>Total .....</b>	<b>600</b>	<b>2,850</b>

## VII. Tiebreakers

Tiebreakers for teams will be the first, second and third high individuals. Tiebreakers for individual scores will be 1) Knowledge Exam, 2) Timber Cruising, 3) Tree Identification, 4) Issues Interview.

## VIII. Awards

Awards will be presented to individuals and/or teams based upon their rankings at the awards ceremony. Awards are sponsored by a cooperating industry sponsor(s) as a special project, and/or by the general fund of the National FFA Foundation.

The high individual in each of the following areas will be given special recognition certificates:

1. General Knowledge Exam
2. Issues Interview
3. Practicums
4. Team Activity

### **IX. References**

This list of references is not intended to be all-inclusive. Other sources may be utilized, and teachers are encouraged to make use of the very best instructional materials available. The following list contains references that may prove helpful during event preparation.

The most current edition of each of the following references will be used.

#### National FFA Core Catalog:

CDE Q&A's (2007-2010)- (<http://shop.ffa.org/cde-qas-c1413.aspx>)

Forestry CDE Scan Forms- (<http://shop.ffa.org/cde-materials-c1289.aspx>)

FFA Learn- 2005 & 2006 CDE Q&A's- (<http://ffa.learn.com/learncenter.asp?id=178409&page=31&mode=preview>)

The U.S. Department of Interior Geological Survey Topographic Map Information and Symbols Key, Map Distribution, U.S. Geological Survey, Box 25286, Federal Center, Denver, CO 80223.

W. M. Harlow, E. S. Harrar, and F. M. White. *Textbook of Dendrology*, current edition. New York, NY: McGraw-Hill Book Company.

*Silvics of Forests of United States*, Handbook #654, volume one and two, U. S. Forest Service, P.O. Box 2417, 12th and Independence Avenue SW, Washington, DC 20013.

*Forestry Handbook*, current edition, Edited by Karl Wenger for the Society of American Foresters, 5400 Grosvenor Lane, Bethesda, MD 20814.

*Choices in Silviculture for American Forests*, current edition. Society of American Foresters, 5400 Grosvenor Lane, Bethesda, MD 20814.

Dendrology at Virginia Tech, <http://www.cnr.vt.edu/DENDRO/dendrology/main.htm>

*Science of Forestry Management*, Kris Irwin, University of Georgia, AAVIM.

Chainsaw manuals from various manufacturers.

#### **Equipment References**

Current Catalog of Forestry Suppliers, Inc., 205 West Rankin Street, Jackson, MS 39204-0397.

Other selected references are available from the U.S. Forest Service and state forestry agencies.



**Tree Identification Specimen List**

11. Alder, Red (*Alnus rubra*)
12. Ash (*Fraxinus sp.*)
13. Aspen, Bigtooth (*Populus grandidentata*)
14. Aspen, Quaking (*Populus tremuloides*)
15. Baldcypress (*Taxodium distichum*)
16. Beech, American (*Fagus americana*)
17. Birch, Black (*Betula lenta*)
18. Birch, White (*Betula papyrifera*)
19. Cherry, Black (*Prunus serotina*)
20. Cottonwood, Eastern (*Populus deltoides*)
21. Elm (*Ulmus sp.*)
22. Fir, Balsam (*Abies balsamea*)
23. Fir, Douglas (*Pseudotsuga menziesii*)
24. Hemlock, Eastern (*Tsuga canadensis*)
25. Hemlock, Western (*Tsuga heterophylla*)
26. Hickory (*Carya sp.*)
27. Maple, Red (*Acer rubrum*)
28. Maple, Sugar (*Acer saccharum*)
29. Oak, Black (*Quercus velutina*)
30. Oak, Chestnut (*Quercus Montana*)
31. Oak, Northern Red (*Quercus rubra*)
32. Oak, Scarlet (*Quercus coccinea*)
33. Oak, Southern Red (*Quercus falcata*)
34. Oak, White (*Quercus alba*)
35. Pecan (*Carya illinoensis*)
36. Pine, Eastern White (*Pinus strobus*)
37. Pine, Loblolly (*Pinus taeda*)
38. Pine, Lodgepole (*Pinus contorta*)
39. Pine, Longleaf (*Pinus palustris*)
40. Pine, Pitch (*Pinus rigida*)
41. Pine, Ponderosa (*Pinus ponderosa*)
42. Pine, Red (*Pinus resinosa*)
43. Pine, Shortleaf (*Pinus echinata*)
44. Poplar, Yellow (*Liriodendron tulipifera*)
45. Red Cedar, Western (*Thuja plicata*)
46. Redcedar, Eastern (*Juniperus virginiana*)
47. Spruce, Red (*Picea rubens*)
48. Spruce, Sitka (*Picea sitchensis*)
49. Spruce, White (*Picea glauca*)
50. Sweetgum (*Liquidambar styraciflua*)
51. Sycamore (*Platanus sp.*)
52. Walnut, Black (*Juglans nigra*)

**Equipment Identification List**

53. Altimeter
54. Back-pack Fire Pump
55. Bark Gauge
56. Bulldozer

57. Canthook
58. Chainsaw
59. Chainsaw Chaps
60. Clinometer
61. Data Recorder
62. Densiometer
63. Diameter Tape
64. Dot Grid
65. Drip Torch
66. Endloader
67. Feller Buncher
68. Fiberglass Measuring Tape
69. Fire Rake
70. Fire Weather Kit
71. Fire-Swatter
72. Flow/current Meter
73. GPS Receiver
74. Hand Compass
75. Hand Lens/Field Microscope
76. Hip Chain
77. Hypo-Hatchet
78. Increment Borer
79. Log Rule
80. Logger's Tape
81. pH Meter
82. Planimeter
83. Plant Press
84. Plastic Flagging
85. Pulaski Forester Axe
86. Relaskop
87. Safety Glasses
88. Safety Hard Hat
89. Soil Sampler
90. Soil Test Kit
91. Staff Compass
92. Stereoscope
93. Survey Instrument
94. Tally Book
95. Tally Meter
96. Tree Caliper
97. Tree Harvester
98. Tree Marking Gun
99. Tree Planting Hoe or Bar
100. Tree Skidder
101. Tree Stick
102. Water Sampler
103. Water Test Kit
104. Wedge Prism
105. Wheeler Caliper

**Tree Disorders Identification List**

106. Air pollution
107. Aphid
108. Beetles
109. Butt or Heart Rot
110. Canker
111. Chemical damage
112. Cicada
113. Climatic injury: snow, wind, frost, drought, hail
114. Damping off
115. Douglas fir tussock moth
116. Emerald ash borer
117. Fire damage
118. Gypsy moth
119. Hemlock woolly adelgid
120. Landscape equipment damage
121. Lightning damage
122. Mechanical damage
123. Mistletoe
124. Nematode
125. Rust
126. Sawfly
127. Scale
128. Spruce budworm
129. Sunscald
130. Tent caterpillar
131. Wetwood or slime flux
132. Wildlife/Livestock damage
133. Wood borer

## National FFA Forestry CDE Issues Interview Scoring Rubric—100 points

Indicators	Point Value					Points Earned	Weight	Total Score
	5	4	3	2	1			
<b>Introduction</b> 5 pts.	Introduction is clear, well organized and focused; clearly prepares listener for what is to come	Topic indicated clearly; organized; focused	Indication of topic somewhat clear; generally organized and focused	Introduction gives some indication of topic; poorly organized	No introduction; extremely brief, non-specific, not related to the topic; disorganized		X1	
<b>Personality/Confidence</b> 10 pts.	Appears friendly and confident; positive attitude; relaxed; defends position without being confrontational	Fairly calm and non-confrontational; defends with confidence; mostly positive attitude	Somewhat nervous; confrontational; somewhat defensive	Nervous; uneasy; shows little confidence in position; confrontational	Extremely nervous; lacks confidence; confrontational		X2	
<b>Poise/ Posture</b> 10 pts.	Maintains good eye contact; voice projection and speed excellent; good posture and uses hand gestures as appropriate	Has good eye contact; voice quality is good; posture somewhat rigid	Breaks eye contact; looks away occasionally; voice quality uneven; poor posture	Seldom makes eye contact; voice quality uneven; distracting gestures	Does not make eye contact; difficult to understand; mumbles; generally distracted		X2	
<b>Response to Questions</b> 15 pts.	Responds quickly with complete statements; uses factual information; opinion based on fact; presents information in a logical manner	Responds with little wait time; uses complete statements most of the time; most answers based on facts; presents information in a somewhat logical order	Hesitates before answering; speaks in phrases rather than complete statements; repeats information; opinions lack factual basis; random thoughts	Few facts and basic information; often uses one word answers; many pauses; long response time; no structure to response	No factual answers; uses one word answers; long delays in responding; answers indicate no understanding of question		X3	
<b>Knowledge of Issue</b> 20 pts.	Extremely well informed; clearly differentiates between fact and opinion; aware of current issues	Well informed; differentiates between fact and opinion; aware of current issues	Somewhat knowledgeable; lines between fact and opinion are blurred; responses sound memorized; limited awareness of current issues	Lacks knowledge; more opinion than fact; talks in circles; avoids the issue; seemingly unaware of current issues	No knowledge of issue; no understanding of current issues		X4	
<b>Conveyance of Thought and Meaning</b> 40 pts.	Communicates opinion as clear statement; uses appropriate terminology; backs up statements with suitable examples; clear, coherent expression of ideas	Makes fairly clear statements using appropriate language; is able to back up most statements	Sounds somewhat rehearsed; difficulty backing up statements; draws blanks; often uses filler words ("ah", "um")	Sounds rehearsed; uses incorrect terminology; unable to back up statements; demonstrates little understanding of terminology	Unable to clearly articulate a clear thought; cannot back up any statements; demonstrates no understanding of terminology		X8	
<b>Total Points</b>								

## Appendix A: AFNR Career Cluster Content Standards

	Performance Measurement Levels	Event Activities Addressing Measurements	Related Academic Standards
<b>ABS.01.01. Performance Indicator: Apply principles of capitalism in the business environment.</b>			Social Studies: 7b and 7g
	<b>ABS.01.01.01.c.</b> Execute supply-and-demand principles in AFNR businesses.	business management problem/general knowledge exam/team activity/TSI	
<b>ESS.02.01. Performance Indicator: Interpret laws affecting environmental service systems.</b>			Science: F4 Language Arts: 1 and 8 Social Studies: 10c
	<b>PST.01.02.01.b.</b> Classify lubricants by SAE viscosity and API service classifications.	chainsaw practicum/general knowledge exam	
<b>ESS.03.01. Performance Indicator: Apply meteorology principles to environmental service systems.</b>			Science: D2 and F4 Language Arts: 8 Social Studies: 3c
	<b>PST.03.01.01.a.</b> Identify components and systems of internal combustion engines.	chainsaw practicum/general knowledge exam	
	<b>PST.03.01.02.b.</b> Analyze and troubleshoot internal combustion engines.	chainsaw practicum/general knowledge exam	
<b>ESS.03.04. Performance Indicator: Apply best management techniques associated with the properties, classifications and functions of wetlands.</b>			Science: C4 and F3 Social Studies: 3c
	<b>CS.08.03.01.a.</b> Describe the conditions that cause the need for tool maintenance.	chainsaw practicum/general knowledge exam	
<b>ESS.06.02. Performance Indicator: Maintain tools, equipment and machinery in safe working order for tasks in environmental service systems.</b>			
	<b>CS.07.01.01.b.</b> Use appropriate personal protective equipment for a given task.	chainsaw practicum/team event	

<b>NRS.01.01. Performance Indicator: Apply knowledge of natural resource components to the management of natural resource systems.</b>		Math: 5a Science: C4 and F3 Social Studies: 3h and 3k
<b>NRS.04.03.01.a.</b> Identify harmful and beneficial insects and signs of insect damage to natural resources.	disorders/general knowledge exam	
<b>ESS.02.01.01.b.</b> Identify the purposes of laws associated with environmental service systems.	general knowledge exam	
<b>NRS.01.02. Performance Indicator: Classify natural resources.</b>		Science: F3
<b>NRS.03.01.02.b.</b> Describe processing of forest products.	general knowledge exam	
<b>NRS.02.01. Performance Indicator: Develop a safety plan for work with natural resources.</b>		Science: F3 and F5 Language Arts: 8
<b>NRS.04.01.01.b.</b> Describe techniques used to suppress wildfires and manage prescribed fires.	general knowledge exam	
<b>NRS.02.02. Performance Indicator: Demonstrate cartographic skills to aid in developing, implementing and evaluating natural resource management plans.</b>		Math: 4B Science: A3 and F2 Social Studies: 3b and 3c
<b>NRS.04.03.01.c.</b> Describe techniques used to manage pests of natural resources.	general knowledge exam	
<b>NRS.02.03. Performance Indicator: Measure and survey natural resource status to obtain planning data.</b>		Math: 5C Science: A3 and F2 Social Studies: 3h
<b>PS.01.01.01.a.</b> Explain systems used to classify plants.	general knowledge exam	
<b>NRS.02.04. Performance Indicator: Demonstrate natural resource enhancement techniques.</b>		Science: F3 Social Studies: 3g and 3k
<b>PS.01.02.02.a.</b> Identify the components, the types and the functions of plant roots.	general knowledge exam	
<b>NRS.02.05. Performance Indicator: Interpret laws related to natural resource management and protection.</b>		Science: F3 Language Arts: 7 Social Studies: 6c
<b>PS.01.02.03.a.</b> Identify the components and the functions of plant stems.	general knowledge exam	

<b>NRS.02.06. Performance Indicator: Apply ecological concepts and principles to natural resource systems.</b>		Science: D2 and F3 Social Studies: 3b, 3f and 3h
PS.01.02.04.a. Discuss leaf morphology and the functions of leaves.	general knowledge exam	
PS.01.02.06.b. Identify the major types of fruit.	general knowledge exam	
PS.01.03.01.a. Explain the basic process of photosynthesis and its importance to life on Earth.	general knowledge exam	
<b>NRS.03.01. Performance Indicator: Produce, harvest, process and use natural resource products.</b>		Science: F3
PS.01.03.01.c. Explain the light-dependent and light-independent reactions that occur during photosynthesis and apply the knowledge to plant management.	general knowledge exam	
PS.02.01.01.b. Describe plant responses to light color, intensity and duration.	general knowledge exam	
<b>NRS.04.01. Performance Indicator: Manage fires in natural resource systems.</b>		Science: F5
PS.02.01.02.b. Determine the optimal air, temperature and water conditions for plant growth.	general knowledge exam	
<b>NRS.04.02. Performance Indicator: Diagnose plant and wildlife diseases and follow protocol to prevent their spread.</b>		Science: F1 and F3 Social Studies: 9d
PS.03.01.01.a. Explain pollination, cross-pollination and self-pollination of flowering plants.	general knowledge exam	
<b>NRS.04.03. Performance Indicator: Manage insect infestations of natural resources.</b>		Science: C4 and F3
PS.03.01.02.a. Demonstrate sowing techniques and provide favorable conditions for seed germination.	general knowledge exam	
CS.06.03.01.a. Demonstrate the importance of safety, health and environmental practices in the workplace.	general knowledge exam/ chainsaw practicum	
<b>PS.01.01. Performance Indicator: Classify agricultural plants according to taxonomy systems.</b>		Science: C3
CS.07.02.01.a. Inform others how to avoid placing oneself in hazardous work situations.	general knowledge exam/ chainsaw practicum	

<b>PS.01.02. Performance Indicator: Apply knowledge of plant anatomy and the functions of plant structures to activities associated with plant systems.</b>		Science: B6, C3 and C5
PST.02.02.01.a. Identify power unit and equipment controls and instruments, along with their functions.	general knowledge exam/chainsaw practicum/tool ID	
ESS.03.01.01.b. Differentiate the types of weather systems and weather patterns.	general knowledge exam/issues interview	
ESS.03.04.01.a. Describe the functions of wetlands and differentiate types of wetlands.	general knowledge exam/issues interview	
NRS.02.05.01.b. Identify the purposes of laws associated with natural resource systems.	general knowledge exam/issues interview	
<b>PS.01.03. Performance Indicator: Apply knowledge of plant physiology and energy conversion to plant systems.</b>		Science: B6 and C5
NRS.02.06.02.a. Describe properties of watersheds and identify the boundaries of local watersheds.	general knowledge exam/issues interview	
NRS.02.06.07.b. Discuss factors that influence the establishment and spread of invasive species.	general knowledge exam/issues interview	
<b>PS.02.01. Performance Indicator: Determine the influence of environmental factors on plant growth.</b>		Science: C6
ESS.03.01.02.a. Explain how meteorological conditions influence air quality.	general knowledge exam/issues interview/tree disorders	
NRS.02.03.01.a. Describe the value of resource inventories and population studies.	general knowledge exam/team event	
<b>PS.03.01. Performance Indicator: Demonstrate plant propagation techniques.</b>		Science: C2
CS.07.04.01.c. Apply general workplace safety precautions/procedures.	general knowledge exam/team event	
CS.02.03.01.a. Explore various career interests/options.	issues interview	
<b>PS.03.05. Performance Indicator: Harvest, handle and store crops.</b>		Science: F5
CS.03.01.01.b. Select the appropriate form of technical and business writing or communication for a specific situation.	issues interview	

<b>PST.01.02. Performance Indicator: Apply physical science laws and principles to identify, classify and use lubricants.</b>		Science: B4
NRS.01.01.01.c. Research and debate one or more current issues related to the conservation or preservation of natural resources.	issues interview/general knowledge exam	
<b>PST.02.02. Performance Indicator: Operate, service and diagnose the condition of power units and equipment.</b>		Science: E2
NRS.02.02.01.a. Demonstrate how to use maps to identify directions and features, calculate actual distance and determine the elevations of points.	mapping practicum/general knowledge exam/compass practicum	
<b>PST.03.01. Performance Indicator: Troubleshoot and repair internal combustion engines.</b>		Science: A1 and A4 Language Arts: 3
NRS.02.01.01.b. Demonstrate safety practices when working in an outdoor environment.	team event	
ESS.06.02.01.a. Demonstrate proper use and maintenance of hand tools.	team event/chainsaw practicum	
<b>CS.02.03. Performance Indicator: Professional Growth: Develop awareness and apply skills necessary for achieving career success.</b>		Language Arts: 12 Social Studies: 4a
NRS.02.04.02.c. Formulate a timber stand improvement plan for a forest.	team event/TSI	
<b>CS.03.01. Performance Indicator: Communication: Demonstrate oral, written and verbal skills.</b>		Language Arts: 4, 5 and 12
CS.08.01.02.b. Demonstrate appropriate operation, storage and maintenance techniques for tools and equipment.	timber cruising/team event	
<b>CS.06.03 Performance Indicator: Provide health, safety and environmental operating guidelines.</b>		Science: F4 and F5 Language Arts: 4 and 5
NRS.01.02.01.c. Conduct a field inventory of trees and other woody plants, and record and document findings.	Timber cruising/TSI/team event	
<b>CS.07.01. Performance Indicator: Apply safety/health practices to AFNR worksites.</b>		Science: F1 and F5
NRS.02.06.08.b. Describe the impact of pollution on natural resources.	Tree disorders/general knowledge exam	



<b>CS.07.02. Performance Indicator: Demonstrate recognized first aid knowledge and procedures to show how they are used by AFNR industries.</b>		Science: F5
<b>NRS.04.02.01.c.</b> Explain management techniques used to reduce infection and spread of plant diseases in natural resources.	Tree disorders/general knowledge exam	
<b>CS.07.04. Performance Indicator: Assess workplace safety.</b>		Science: F5
<b>PS.03.05.01.b.</b> Assess the stage of growth to determine crop maturity or salability and demonstrate proper harvesting techniques.	TSI	
<b>CS.08.01. Performance Indicator: Evaluate and select the appropriate tool to perform a given task.</b>		
<b>NRS.03.01.01.b.</b> Determine when to harvest forest products.	TSI	
<b>NRS.01.01.02.c.</b> Conduct a field study of an ecosystem, and record and document observations of species interactions.	TSI/team event	
<b>CS.08.03. Performance Indicator: Maintain tools for efficient use.</b>		
<b>CS.08.01.01.c.</b> Use tools and equipment appropriately to complete a specific task.	TSI/timber cruising/team event/compass practicum	

**Appendix B: Related Academic Standards**

National academic standards for mathematics, science, English language arts and social studies related to this event are reported below. The statements are based on information in reports of the respective associations/organizations in the academic areas. Some adjustment of numbering was done to facilitate the process of alignment with the standards that have been developed in the pathways of the Agriculture, Food and Natural Resources (AFNR) Career Cluster.

The approach was to determine the presence of alignment between the content standards, expectations or thematic strands of the four academic areas and the performance indicators of the AFNR Standards. Supporting statements have been included to clarify content of the respective content standards, expectations or thematic strands. The statements were initially developed independently by the respective organizations and, therefore, are not parallel in wording and presentation. Occasionally minor editing was done to adjust the background or stem of a statement but not the statement itself.

**Mathematics**

- 4. Standard and Expectations: Measurement
  - 4B. Apply appropriate techniques, tools and formulas to determine measurements.
- 5. Standard and Expectations: Data Analysis and Probability
  - 5A. Formulate questions that can be addressed with data and collect, organize and display relevant data to answer them.
  - 5C. Develop and evaluate inferences and predictions that are based on data.

**Science**

- A. Content Standard: Science as an Inquiry
  - A1. Identify questions and concepts that guide scientific investigation.
  - A3. Use technology and mathematics to improve investigations and communications.
  - A4. Formulate and revise scientific explanations and models using logic and evidence.
- B. Content Standard: Physical Science
  - B4. Motions and forces.
  - B6. Interactions of energy and matter.
- C. Content Standard: Life Science
  - C2. Molecular basis of heredity.
  - C3. Biological evolution.
  - C4. Interdependence of organisms.
  - C5. Matter, energy and organization in living systems.
  - C6. Behavior of organisms.
- D. Content Standard: Earth and Space Science
  - D2. Geochemical cycles.
- E. Content Standard: Science and Technology
  - E2. Understanding about science and technology.
- F. Content Standard: Science in Personal and Social Perspectives
  - F1. Personal and community health.
  - F2. Population growth.
  - F3. Natural resources.
  - F4. Environmental quality.
  - F5. Natural and human-induced hazards.

**English Language Arts**

1. Students read a wide range of print and non-print texts to build an understanding of texts, of themselves and of the cultures of the United States and the world; to acquire new information; to respond to the needs and demands of society and the workplace and for personal fulfillment. Among these texts are fiction and nonfiction, classic and contemporary works.
3. Students apply a wide range of strategies to comprehend, interpret, evaluate and appreciate texts. They draw on their prior experience, their interactions with other readers and writers, their knowledge of word meaning and of other texts, their word identification strategies and their understanding of textual features (e.g., sound-letter correspondence, sentence structure, context, graphics).
4. Students adjust their use of spoken, written and visual language (e.g., conventions, style, vocabulary) to communicate effectively with a variety of audiences and for different purposes.
5. Students employ a wide range of strategies as they write and use different writing process elements appropriately to communicate with different audiences for a variety of purposes.
7. Students conduct research on issues and interests by generating ideas and questions, and by posing problems. They gather, evaluate and synthesize data from a variety of sources (e.g., print and non-print texts, artifacts, people) to communicate their discoveries in ways that support their purpose and audience.
8. Students use a variety of technological and information resources (e.g., libraries, databases, computer networks, video) to gather and synthesize information and to create and communicate knowledge.
12. Students use spoken, written and visual language to accomplish their own purposes (e.g., for learning, enjoyment, persuasion and the exchange of information).

**Social Studies**

3. Thematic Strand: People, Places and Environments
  - 3b. create, interpret, use and synthesize information from various representations of the earth, such as maps, globes and photographs;
  - 3c. use appropriate resources, data sources and geographic tools such as aerial photographs, satellite images, geographic information systems (GIS), map projects, and cartography to generate, manipulate and interpret information such as atlases, data bases, grid systems, charts, graphs and maps.
  - 3f. use knowledge of physical system changes such as seasons, climate and weather, and the water cycle to explain geographic phenomena;
  - 3g. describe and compare how people create places that reflect culture, human needs, government policy and current values and ideals as they design and build specialized buildings, neighborhoods, shopping centers, urban centers, industrial parks and the like;
  - 3h. examine, interpret and analyze physical and cultural patterns and their interactions, such as land use, settlement patterns, cultural transmission of customs and ideas and ecosystem changes;
  - 3k. propose, compare and evaluate alternative policies for the use of land and other resources in communities, regions, nations and the world.
4. Thematic Strand: Individual Development and Identity
  - 4a. articulate personal connections to time, place and social/cultural systems;
6. Thematic Strand: Power, Authority and Governance
  - 6c. analyze and explain ideas and mechanisms to meet needs and wants of citizens, regulate territory, manage conflict, establish order and security and balance competing conceptions of a just society;

7. Thematic Strand: Production, Distribution and Consumption

7b. analyze the role that supply and demand, prices, incentives and profits play in determining what is produced and distributed in a competitive market system;

7g. compare basic economic systems according to how rules and procedures deal with demand, supply, prices, the role of government, banks, labor and labor unions, savings and investments and capital;

9. Thematic Strand: Global Connections

9d. analyze the causes, consequences and possible solutions to persistent, contemporary and emerging global issues, such as health, security, resource allocation, economic development and environmental quality;

10. Thematic Strand: Civic Ideals and Practices

10c. locate, access, analyze, organize, synthesize, evaluate and apply information about selected public issues—identifying, describing and evaluating multiple points of view;

**Appendix C: Doyle Log Rule**

<b>Doyle Log Rule Form Class 80</b>									
Volume (Board Feet) by Number of 16 Foot Logs									
<b>DBH Inches</b>	<b>1</b>	<b>1 1/2</b>	<b>2</b>	<b>2 1/2</b>	<b>3</b>	<b>3 1/2</b>	<b>4</b>	<b>4 1/2</b>	<b>5</b>
10	16	20	23	24	26				
11	24	30	35	38	42				
12	31	39	47	52	57	60	62		
13	42	53	64	72	80	84	88		
14	52	67	82	93	104	109	114		
15	64	84	104	118	132	141	150		
16	77	101	125	143	161	174	186		
17	92	122	152	175	198	214	230		
18	108	144	179	206	234	254	273		
19	126	168	210	244	278	301	324		
20	144	193	242	282	321	348	374	396	417
21	164	221	278	324	370	403	436	462	489
22	185	250	315	368	420	458	497	529	561
23	208	282	356	417	478	521	564	604	643
24	231	314	397	466	536	583	630	678	725
25	256	350	443	522	600	655	710	764	818
26	282	386	489	576	663	727	791	852	912
27	310	425	540	638	735	806	877	946	1015
28	339	466	592	700	807	885	963	1040	1118
29	370	509	648	766	884	970	1056	1144	1232
30	400	552	703	832	961	1055	1149	1248	1346

## Bd Ft Volume Estimation Worksheet

Tree Number	DBH	Number of Logs	Volume
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
		Total Volume	

Remember to record the DBH, Number of Logs and Total Volume on your Scantron sheet.