SOIL AND WATER CONSERVATION

3-4 Member Team

IMPORTANT NOTE

Please thoroughly read the General CDE Rules Section at the beginning of this handbook for complete rules and procedures that are relevant to State FFA Career Development Events.

I. PURPOSE

The Natural Resources Conservation Service (NRCS) sponsors this event to encourage the development of agricultural stewardship in the areas of land and water. Managing these systems involves a deep understanding of both science and mathematics. As such, students will acquire the skills needed to confront the ever increasing conservation issues.

II. OBJECTIVES

The objectives of the contest are to teach participants the principles of soil and water conservation including soil/water relationships, soil/water mathematic principles, and land surveying.

III. EVENT RULES

A. The event will begin at 7:00 a.m.
B. No talking, comparing, or copying of cards.
C. Decisions of the judges are final.
D. Both team members and Individuals will compete for individual awards.
E. Team scores will be determined from the best three individual's total scores.
F. The schools will be informed of the location for each event at check in. It is the students' responsibility to ensure that they are at the proper location at the appropriate time.

IV. EVENT FORMAT

A. Team Make-Up
1. One team composed of three or four members will constitute a team. Schools may have only one team.
2. Schools not entering a team may enter one or two students on an individual basis.

B. Safety and Equipment
1. Participants responsibilities:
   a. Participants must provide any personal protection equipment that is appropriate for the activity. Participants must be prepared for outdoor weather conditions. All participants must conduct themselves in a safe and courteous manner. Anyone deemed to be a danger to themselves and/or others will be escorted from the area and will receive a zero (0) score for the contest.
2. Equipment the participants must provide:
   a. Transit Level (Not self-leveling) and Tripod

b. Abney Hand Level
c. Calculator
d. Clipboard
e. Pencils

3. Equipment provided at the contest:
   a. Survey Rods

C. Organization

1. Each participant will complete a written test/problem solving and four (4) skill activities. The test/problem solving will include all of the understanding competencies listed below. The skills will be developed from the performance objectives listed below.

V. CONTENT

A. The following is a list of the subject matter statements with specific information, knowledge, and skills identified for each unit. Examination questions (written exam) will be developed primarily from the objectives of UNDERSTANDING, as listed below. PERFORMANCE as described below will define the "hands-on" skills competition.

Land Measurement and Surveying

A. Knowledge

1. Conversion of units of measurement (inch, foot, yard, rod, kilometer, etc.).
2. Expression of distance in full or plus stations.
3. Procedures for measuring distance by taping, stadia, pacing, odometer.
4. Conversions of units of area (square feet, acre, hectares, square miles, etc.).
5. Formulas for calculating areas (triangle, rectangle, trapezoids, etc.).
6. Differential, profile and topographic leveling.
7. Definition of leveling terms.
8. Procedure for proper use of level and rod.
9. Procedures for transcribing and checking differential, profile, and topographic surveying notes.
10. Definition and description of terms used with the rectangular survey system.
11. Writing of legal land descriptions.
12. Interpret topographic maps
13. Global Positioning System (GPS)

B. Performance

1. Read a rod with and without the target (to the tenth’s and hundredth’s)
2. Determine difference in elevation between points.
3. Complete a set of surveyor's notes.
4. Determine the horizontal distance between two points using automatic level and stadia.
5. Measure distance by pacing.

6. Use Abney hand level. (% Slope)

Soil and Water Conservation

A. Understanding

1. Define contour farming, strip cropping, and terracing and the purpose of each.
2. Types of terraces and factors affecting their spacing.
3. Causes and remedies of water and wind erosion.
4. Types of water and wind erosion.
5. Universal Soil Loss Equation (USLE)
6. Water measurement
7. Soil Health Principles

VI. SCORING

Surveying and Soil and Water Conservation - Knowledge 100
Land Management and Surveying - Performance..... 200

Total Points

Individual… 300
Team..... 900

VII. TIEBREAKERS

A. Team tie breakers will be settled in the following order:
   1. Surveying and Soil and Water Conservation – Knowledge
   2. Land Management and Surveying – Performance
   3. Soil and Water Conservation – Knowledge
B. Ties for individual awards shall be broken by substituting the word "individual" wherever the word team appears.

VII. AWARDS

The top five teams and top 10 individuals will be determined and recognized. Awards will be given to the top three teams and individuals during the Oklahoma FFA Convention.

VIII. REFERENCES

- Buriak, P., & Edward, W. (1996). Physical science applications in agriculture. Prairie Village, KS: Interstate Publishers, Inc.
- Curriculum and Instructional Materials Center [CIMC]. (2009) Agriculture career development: Comprehensive agricultural mechanics. Retrieved from from http://www.okcareertech.org/about/ stateTagency/divisions/curriculumTcimc).
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- Roth, L. O., & Field, L. (1994). An introduction to agricultural engineering. New York, NY: Aspen Publishers.
- Schwab, G. O., Fangmeier, D. D., Elliot, W. J. (1995). Soil and water management systems. New York, NY: John Wiley and Sons, Inc.