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 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, 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.

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 the 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
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 Environmental and Natural Resources 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

Environmental and natural resource education has a responsibility to educate the public and prepare students to enter careers in the environmental and natural resource industry. The purpose of the environmental and natural resource career development event is to foster student interest, promote environmental and natural resource instruction in the agricultural education curriculum and provide recognition for those who have demonstrated skills and competencies as a result of environmental and natural resource instruction.

II. 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.

III. Event Rules

A. Each team will be comprised of four members. All four scores will be used to determine the total team score.
B. Participants must come to the event prepared to work in adverse weather conditions. The event will be conducted regardless of the weather. Participants should have rainwear, warm clothes and appropriate footwear.
C. Under no circumstance will any participant be allowed to handle any of the items in the identification portion of the practicums. Any infraction of this rule will be sufficient to eliminate a team from the event.
D. Participants will be assigned to group leaders who will escort them to various event-staging sites. Each participant is to stay with his or her assigned group leader throughout the event or until told to change leaders by the event superintendent.
E. All participants will be given an identification number by which they will be designated throughout the event.
F. All written material will be furnished for the event. No written materials such as tests, problems and worksheets shall be removed from the site.

IV. Event Format

A. Equipment
1. **Materials student must provide** - teams will be notified in the team orientation packet if these materials will be needed for the current year:
   a. Computers: Each state team is required to provide a laptop computer for the team activity. Minimum computer specifications will be determined and posted on the CDE webpage prior to the event. Computers must be Microsoft Office ® compatible.
   b. Global Positioning System (GPS): The minimum requirements for GPS will be the Garmin eTrex receiver or compatible. Position accuracy WAAS enabled three meters, 20 routes, 500 way points (total).
2. **Equipment provided-** A clipboard, two sharpened No. 2 pencils and all other tools and equipment will be furnished for the event. Participants must use the tools and equipment furnished at the event.

B. Team Activity - 90 minutes - 1,000 points total
1. Students will be provided a scenario that deals with an environmental/natural resource problem from the following areas:
   a. Soils
      i. Physical properties
      ii. Soil erosion
      iii. Soil analysis
      iv. Environmental impact of soil degradation
   b. Water
      i. Importance of water quality
      ii. Factors that influence the quality of water
      iii. Measure to ensure water quality
      iv. Management practices used to ensure water quality
   c. Ecosystems
      i. Basic ecological concepts
      ii. Management of ecosystems
      iii. Grassland ecosystems
      iv. Forestry ecosystems
      v. Aquatic ecosystems
      vi. Wetland ecosystems
      vii. Non-native species effect on ecosystems
   d. Waste management
      i. Preventing and reducing solid waste
      ii. Disposing of waste
      iii. Manure management
      iv. Hazardous waste
2. Teams will be required to develop both an oral, as well as a written statement that addresses the questions in the annual scenario.
4. Teams will submit a written summary of their findings at the end of one hour.
5. Teams will have ten (10) minutes of prep time prior to their oral presentation.
6. Teams will be required to give an oral presentation justifying the decisions made by the team. The team will have eight minutes to make the oral presentation.
7. Teams will be required to answer questions regarding the decision reached by their team. The question period will be five minutes in length.

Team Activity scorecard

Oral presentation and questions	700 points
Written presentation	150 points
TOTAL	850 points

C. Individual Activities

1. **Objective Written Exam** - 60 minutes - 100 points
   The written exam will consist of fifty questions submitted by the event committee.
2. **Annual Practicums:** Students will participate in the following two areas on an annual basis:
   a. Writing exercise – 100 points
      i. Participants will create a written document of 350 words or less that may be a news/press release, letter to the editor, etc.
      ii. The document should contain the basic elements/facts customarily found in written publications (who, what, where, when and how). The elements/facts presented are to reflect the thoughts of the participant in relation to the topic being addressed.
      Examples -
      - What type of change is being proposed?
      - Does the proposed solution reflect an economic or natural resource impact on surrounding communities?
      - Have participants clearly stated the outlined problem and a solution?
      - Does the document outline and explain the problem in a clear manner? Could someone from outside of the CDE or FFA arena read the release and understand the problem and proposed solution?

   b. Identification – 100 points
   Students will identify fifty items from the following combined areas. See complete list in the reference section of this chapter of the handbook.
      i. Equipment
      - Water quality
      - Aquatic
      - Wildlife
      - Geographical
      - Weather
      - Forestry

      ii. Native Species
      - Wildlife
      - Birds
      - Reptiles/amphibians
      - Fish and other aquatic animals

      iii. Invasive/non-native species
      - Plants
      - Animals

3. **Rotational Practicums:** Students will participate in four of the following practicums each year. Practicums may vary from year to year -100 points each.
   a. Water Analysis
      i. Using measuring devices, each participant will measure a sample of water for quality analysis. Four of the following categories will be tested each year: dissolved oxygen, nitrates, nitrites, pH, temperature, phosphates, water hardness, chlorine and ammonia.
      ii. Analyze the results of measurements and determine if it is suitable for a specific use.
      iii. Explain ways the water quality can be improved.
   b. Soil Analysis (lab analysis)
      Participants will:
      i. Use a soil probe to pull a soil sample.
      ii. Be given a map of a specific field to be sampled and plot areas for pulls.
      iii. Analyze actual lab results.
      iv. Use this information along with an extension service bulletin to make recommendations that need to be applied.
   c. Soil Profile
      i. Students will be furnished with a scorecard, an interpretation guide and a pre-dug soil pit or core/monolith to judge. The participants will identify soil horizons, textures, percentage course fragments, pH, horizon colors, slope, geologic origin, soil permeability, irrigation suitability and soil structure types of the soil present in the given example.
      ii. Using the information from the scorecard and interpretation guide, the student will then identify the most appropriate use for the given area and the erosion control practice that best fits the designated use for the land.
   d. GPS Locations
      Participants will utilize the global position system (GPS) unit (supplied by the team) to complete one of the following:
      i. Identify the longitude and latitude of a given set of points using a GPS unit and a map.
      ii. Identify boundaries of a given area including calculation of land area and linear feet of boundary.
      iii. Use GPS unit and topographic map to layout the location of fence line, pond, drainage structure or other related facility.
      iv. Use a GPS unit to mark the location of a path or road through a given area.
      v. Use GPS unit to determine slope of land area for installation of drainage and or other related facilities.
   e. Environmental Analysis
      Areas that could be analyzed are as follows: forests, grasslands, wetlands, farm land and rangelands. Any of these areas could be bordered by industry, urban development, recreational areas, etc.
      Students will address the following five aspects:
      i. Living organisms: students will identify and list as many living organisms (both native and invader) as they can find within the marked boundaries of the site. Additional species may be artificially introduced as mounted or preserved specimens.
      ii. Non-living components (shelter, nutrients): students will inventory resources such as water, shelter, etc. upon which resident species depend for survival.

iii. Food web: students will define relationships among the plants and animal species that are found or introduced in the study area.
iv. Ecological succession: students will identify the stages of succession of various grasses, shrubs and trees. They will also identify causes of changes in succession patterns.
v. Situation analysis: students will determine whether a healthy balance exists between the environment and the species that depend upon it. They will also check remediation practices where needed.

f. Waste Management

i. Participants will be presented with a scenario (agricultural producer, neighborhood, office building, manufacturing plant, etc.,) that generates waste material creating environmental threats.
ii. Participants will evaluate the nature of waste output to identify plausible options for reducing the rate of waste generation, recycling or providing potential alternative uses for the waste, treating the waste or disposing of the waste.
iii. Participants should be able to identify at least one benefit and one deterrent for each possible option that is offered.

V. Scoring

Individual	*Possible Points*
Written Exam	100
Writing Exercise	100
Identification	100
Rotational Practicums	400 (100 points/practicum)
Total Possible Individual Points	700

Team	*Possible Points*
Individual scores of four team members	2800
Team Activity	850
Total Possible Team Points	3650

VI. Tiebreaker

A. Team
   1. Team with the highest team activity score
   2. Team with the highest annual practicum scores
   3. Team with the highest rotational practicum scores
B. Individual
   1. Individual with the highest exam score
   2. Individual with the highest annual practicum scores
   3. Individual with the highest rotational practicum scores

VII. 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.

VIII. 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.

National FFA Core Catalog - CDE Questions and Answers
http://shop.ffa.org/cde-qas-c1413.aspx

Wildlife Science Manual Instructional CD-ROM: The Core Catalog, National FFA Organization product number CAERT-WSM. 888-332-2668 fax orders to 800-366-6556 or on line at http://shop.ffa.org/wildlife-science-manual-cd-rom-p39980.aspx

Environmental Science and Technology. Porter, Lee, Turner and Hillan. Interstate Publishers, Inc. 1997. PO Box 50 Danville, IL 61834-0050

Managing Our Natural Resources. Camp and Daughtery. Delmar Publishers, Inc. 1988. Albany NY.

Wildlife Management, Stutzenbaker, Scheil, Swan, Lee and Mattics, Interstate Publishers, Inc. 1999.

Natural Resources and Environmental Technology, Lee, Interstate Publishers, Inc. 2000.

Environmental Science for Agriculture and the Life Sciences. Albany, NY. Delmar Publishers 1994.

Our Natural Resources and Their Conservation. Kircher, H.B., Wallace, D.L., & Gore, D.J. Danville, IL. Interstate Publishers, Inc. 1992.

Soil Science: Evaluation, Interpretation, and Management of Soil. Columbia, MO. Instructional Materials Laboratory, University of Missouri, phone: 800-669-2465.

The Global Ecology Handbook. What You Can Do About the Environmental Crisis. Courson, W.H. (Ed.). Boston, MA. Beacon Press 1990.

Biological Science, an Ecological Approach. Dubuque, IA. Kendall Hunt Publishers, 1992

Introduction to Forestry Science. L.DeVere Burton. Delmar Publishers, 2000.

Agriscience & Technology. L. DeVere Burton. Delmar Publishers, 1992.

Land Judging in Oklahoma. J.H. Stiegler, 4-H Member's Guide, Oklahoma Cooperative Extension Service, Division of Agricultural Sciences and Natural Resources, Oklahoma State University. 4H.HPS.101

Non-Native (Invader) Resource List

U.S. Fish and Wildlife Service http://www.fws.gov/
U.S. Park Service http://www.nps.gov/index.htm
U.S. Dept. of Interior http://www.doi.gov/index.cfm
U.S. Forest Service http://www.fs.fed.us/
State Department of Natural Resources
National Biological Information Infrastructure www.nbii.gov
Great Lakes Indian Fish and Wildlife Commission www.glifwc.org
EPA– Gulf of Mexico Program www.epa.gov/gmpo

Identification List – 100 points

Equipment

Water Quality

101. refractometer
102. secchi disk
103. thermometer
104. water bottle samplers
105. water meter for physical/chemical parameters (pH, conductivity and/or DO)

Aquatic

107. aquatic net
108. bottom dredges
109. fish measuring board
110. plankton net
111. seines
112. sieves
113. stream bottom sampler

Wildlife

114. animal tags/bands
115. binoculars
116. mammal traps
117. snake/reptile stick
118. radio telemetry unit

Geographical

119. GPS unit

Weather

120. anemometer
121. barometer
122. sling psychrometer
123. rain gauge

Forestry

124. biltmore stick
125. diameter tape
126. prism
127. tree increment borer

Native Species

Wildlife

201. armadillo
202. badger
203. beaver
204. bighorn sheep
205. bison
206. black bear
207. blacktail deer
208. bobcat
209. chipmunk
210. cottontail
211. coyote
212. elk
213. fox squirrel
214. gray squirrel
215. gray wolf
216. grizzly bear
217. jack rabbit
218. mole
219. moose
220. mountain goat
221. mountain lion
222. mule deer
223. muskrat
224. opossum
225. pocket gopher
226. polar bear
227. porcupine
228. prairie dog
229. pronghorn
230. raccoon
231. red fox
232. skunk
233. weasel
234. whitetail deer
235. woodchuck

Birds

301. bald eagle
302. blue jay
303. bluebird
304. brown thrasher
305. Canada goose
306. canvasback duck
307. cardinal
308. Cooper's hawk
309. Crissal thrasher

Birds (cont.)
310. mourning dove
311. great blue heron
312. great horned owl
313. golden eagle
314. hummingbird
315. kestrel
316. least tern
317. mallard duck
318. osprey
319. pelican
320. purple martin
321. quail
322. red-tailed hawk
323. sand hill crane
324. blue-winged teal
325. turkey
326. whooping crane
327. wood duck

Reptiles/Amphibians
401. alligator
402. alligator snapping turtle
403. black rat snake
404. bullfrog
405. collared lizard
406. common snapping turtle
407. copperhead snake
408. coral snake
409. corn snake
410. cottonmouth
411. crocodile
412. fence lizard
413. garter snake
414. green anole lizard
415. gray tree frog
416. rattlesnake
417. red eared slider
418. ring neck snake
419. rubber boa snake
420. scarlet king snake
421. Woodhouse's toad

Fish and Other Aquatic Animals
501. blue catfish
502. bream/bluegill
503. brown trout
504. carp
505. channel catfish
506. clam
507. crab
508. crappie
509. crayfish
510. flathead catfish
511. largemouth bass
512. lobster
513. salmon
514. shrimp
515. smallmouth bass
516. sturgeon
517. trout
518. walleye
519. yellow bullhead catfish

Invasive/Non-Native Species

Plants
601. broom snake weed
602. cheatgrass
603. Chinese tallow
604. cogongrass
605. English ivy
606. Himalaya blackberry
607. hydrilla
608. juniper
609. kudzu
610. leafy spurge
611. melaleuca
612. mimosa tree
613. purple loosestrife
614. Russian olive
615. saltcedar

Animals
701. Asiatic clam
702. Asian long-horned beetle
705. Chinese mitten crab
706. chukkar
707. English sparrow
708. European starling
709. feral hog
710. feral horse
711. fire ant
712. gopher
713. Norway rat
714. nutria
715. ring neck pheasant
716. sea lamprey
717. tilapia
718. zebra mussel

Environmental and Natural Resources
Team Activity Summary Scorecard

State: _____ Team No.: _____

	Category	Possible	Score
1	Quality of Management Plan (Written Statement)	150	
2	Analysis of Information (Oral Presentation)	200	
3	Team Presentation	300	
4	Questions	200	
	TOTAL	850	

Judge's Name Judge's Signature Date

Environmental and Natural Resources
Team Activity Written Statement Scorecard – 150 points

State: _____ **Team No.:** _____

Indicators	Very strong evidence skill is present 5-4	Moderate evidence skill is present 3-2	Strong evidence skill is not present 1-0	Points Earned	Weight	Total Score
A. Spelling/ grammar (sentence structure, verb agreement, etc.)	*Spelling and grammar are extremely high quality.* • 2 or fewer spelling errors are present. • 2 or fewer grammar errors are present.	*Spelling and grammar are adequate.* • 3-5 spelling errors are present. • 3-5 grammar errors are present.	*Spelling and grammar are less than adequate.* • 6 or more spelling errors are present. • 6 or more grammar errors are present.		X 5	
B. Message	*Communicates ideas extremely clearly as well as extremely focused. Thoughts are very interesting and understandable.* • All main ideas are supported by clear and vivid details. • Clearly organized and concise by remaining on target, is completely focused with obvious construction and strong introduction, body and conclusion layout.	*Communicates ideas clearly and concisely, and message is interesting and understandable.* • Most of the main ideas are supported by sufficient details. • Good organization with few statements out of place or lacking in clear construction.	*Communicates ideas clearly, but message is difficult to understand.* • None of the main ideas are supported by sufficient details. • Little to no organization is present and is sometimes awkward and lacking construction.		X 5	
C. Writing style	*Writing style is selectively appropriate for the intended audience.* • The style chosen has obviously been well thought-out based on the specific audience.	*Thought was given to the intended audience, and the style reflects the purpose for communicating with that audience.* • Most language is appropriate for the intended audience.	*Writing style does not show intent to connect with different types of audiences, style is more for a generic reader.* • Some language used might be confusing for some audiences		X 5	
CONTENT						
Indicator	**10-7 points**	**6-4 points**	**3-0 points**			
D. Written content	*Covers topic in-depth with details and examples.* • Subject knowledge is excellent.	*Includes essential knowledge about the topic.* • Subject knowledge appears to be good.	*Includes essential information about the topic but there are 1-2 factual errors.*		X 7.5	
					Total Points	

Environmental and Natural Resources
Team Activity - Analysis of Information (Presentation) - 200 points

State: _____ **Team No.:** _____

Indicators	Very strong evidence skill is present 5-4	Moderate evidence skill is present 3-2	Strong evidence skill is not present 1-0	Points Earned	Weight	Total Score
A. Examples	*Examples are vivid, precise and clearly explained.* • Examples are original, logical and relevant.	*Examples are usually concrete, sometimes needs clarification.* • Examples are effective, but need more originality	*Examples are abstract or not clearly defined.* • Examples are sometimes confusing, leaving the listeners with questions.		X 10	
B. Being detail-oriented	*Is able to stay fully detail-oriented.* • Always provides details which support the issue; is well organized.	*Is mostly good at being detail-oriented.* • Usually provides details which are supportive of the issue; displays good organizational skills.	*Has difficulty being detail-oriented.* • Sometimes overlooks details that could be very beneficial to the issue; lacks organization.		X 10	
C. Connecting and articulating facts and issues	*Exemplary in connecting facts and issues and articulating how they impact the issue locally and globally.* • Possesses a strong knowledge-base and is able to effectively articulate information regarding related facts and current issues.	*Sufficient in connecting facts and issues and articulating how they impact the issue locally and globally.* • Possesses a good knowledge-base and is able to, for the most part, articulate information regarding related facts and current issues.	*Has difficulty with connecting facts and issues and articulating how they impact the issue locally and globally.* • Possesses some knowledge-base but is unable to articulate information regarding related facts and current issues.		X 20	
					Total Points	

Environmental and Natural Resources
Team Activity - Team Presentation - 300 points

State: _____ **Team No.:** _____

Oral Communication – 200 points						
Indicators	**Very strong evidence skill is present 5-4**	**Moderate evidence skill is present 3-2**	**Strong evidence skill is not present 1-0**	**Points Earned**	**Weight**	**Total Score**
B. Speaking without hesitation	*Speaks very articulately without hesitation.* • Never has the need for unnecessary pauses or hesitation when speaking.	*Speaks articulately but sometimes hesitates.* • Occasionally has the need for a long pause or moderate hesitation when speaking.	*Speaks articulately but frequently hesitates.* • Frequently hesitates or has long, awkward pauses while speaking.		X 10	
C. Tone	*Appropriate tone is consistent.* • Speaks at the right pace to be clear. • Pronunciation of words is very clear and intent is apparent.	*Appropriate tone is usually consistent.* • Speaks at the right pace most of the time but shows some nervousness. • Pronunciation of words is usually clear, sometimes vague.	*Has difficulty using an appropriate tone.* • Pace is too fast; nervous. • Pronunciation of words is difficult to understand; unclear.		X 10	
E. Speaking unrehearsed	*Speaks unrehearsed with comfort and ease.* • Is able to speak quickly with organized thoughts and concise answers.	*Speaks unrehearsed mostly with comfort and ease but sometimes seems nervous or unsure.* • Is able to speak effectively, has to stop and think and sometimes gets off focus.	*Shows nervousness or seems unprepared when speaking unrehearsed.* • Seems to ramble or speaks before thinking.		X 10	
G. All team members participated	• All team members took an active role in the presentation.	• Three team members took an active role in the presentation.	• Two or less team members took an active role in the presentation.		X 10	
Non-verbal communication – 100 points						
A. Attention (eye contact)	*Eye contact constantly used as an effective connection.* • Constantly looks at the entire audience (90-100% of the time).	*Eye contact is mostly effective and consistent.* • Mostly looks around the audience (60-80% of the time).	*Eye contact does not always allow connection with the speaker.* • Occasionally looks at someone or some groups (less than 50% of the time).		X 5	
B. Mannerisms	*Does not have distracting mannerisms that affect effectiveness.* • No nervous habits.	*Sometimes has distracting mannerisms that pull from the presentation.* • Sometimes exhibits nervous habits or ticks.	*Has mannerisms that pull from the effectiveness of the presentation.* • Displays some nervous habits – fidgets or anxious ticks.		X 5	
C. Gestures	*Gestures are purposeful and effective.* • Hand motions are expressive and used to emphasize talking points. • Great posture (confident) with positive body language.	*Usually uses purposeful gestures.* • Hands are sometimes used to express or emphasize. • Occasionally slumps; sometimes negative body language.	*Occasionally gestures are used effectively.* • Hands are not used to emphasize talking points; hand motions are sometimes distracting. • Lacks positive body language; slumps.		X 5	
D. Well-poised	Is extremely well-poised. • Poised and in control at all times.	Usually is well-poised. • Poised and in control most of the time; rarely loses composure.	Isn't always well-poised. • Sometimes seems to lose composure.		X 5	
				Total Points		

Environmental and Natural Resources
Writing Exercise Scorecard – 100 points

State: _____ **Team No.:** _____

Indicators	Very strong evidence skill is present 5-4	Moderate evidence skill is present 3-2	Strong evidence skill is not present 1-0	Points Earned	Weight	Total Score
A. Spelling/ grammar (sentence structure, verb agreement, etc.)	*Spelling and grammar are extremely high quality.* • 2 or fewer spelling errors are present. • 2 or fewer grammar errors are present.	*Spelling and grammar are adequate.* • 3-5 spelling errors are present. • 3-5 grammar errors are present.	*Spelling and grammar are less than adequate.* • 6 or more spelling errors are present. • 6 or more grammar errors are present.		X 2.5	
B. Message	*Communicates ideas extremely clearly as well as extremely focused. Thoughts are very interesting and understandable.* • All main ideas are supported by clear and vivid details. • Clearly organized and concise by remaining on target, is completely focused with obvious construction and strong introduction, body and conclusion layout.	*Communicates ideas clearly and concisely, and message is interesting and understandable.* • Most of the main ideas are supported by sufficient details. • Good organization with few statements out of place or lacking in clear construction.	*Communicates ideas clearly, but message is difficult to understand.* • None of the main ideas are supported by sufficient details. • Little to no organization is present and is sometimes awkward and lacking construction.		X 5	
C. Writing style	*Writing style is selectively appropriate for the intended audience.* • The style chosen has obviously been well thought-out based on the specific audience.	*Thought was given to the intended audience, and the style reflects the purpose for communicating with that audience.* • Most language is appropriate for the intended audience.	*Writing style does not show intent to connect with different types of audiences, style is more for a generic reader.* • Some language used might be confusing for some audiences.		X 2.5	
CONTENT						
Indicator	**10-7 points**	**6-4 points**	**3-0 points**			
D. Written content	*Covers topic in-depth with details and examples.* • Subject knowledge is excellent.	*Includes essential knowledge about the topic.* • Subject knowledge appears to be good.	*Includes essential information about the topic but there are 1-2 factual errors.*		X 5	
					Total Points	

Environmental and Natural Resources
Water Analysis Scorecard – 100 points

Name: _____ **Participant No.:** _____

State: _____ **Team No.:** _____

Your job today is to analyze the given water sample. You will need to find the given levels of the following possible factors: nitrites, dissolved oxygen, nitrates, pH, phosphates, water hardness, chlorine, ammonia and the current temperature. Using this information indicate if the water quality is suitable for the given species. Indicate the limiting factors and explain ways this water quality can be improved. (Each year, you will test for four of the categories listed in the handbook.)

Category	Answers	Possible Points	Score
1		10	
2		10	
3		10	
4		10	
Indicate if the quality of the sample is suitable for the following use:		10	
Indicate the limiting factor(s):		25	
How can water quality be improved?		25	
	Total Score:	100	

Judge's Name Judge's Signature Date

Environmental and Natural Resources
Soil Analysis Scorecard – 100 points

Name: _____ **Participant No.:** _____

State: _____ **Team No.:** _____

Your job today is to take a soil sample from the given area. You will need to determine the levels of nitrogen, phosphorus, potassium and pH from the lab results. Utilizing the lab results and the given Extension Service bulletin make a recommendation for the amount and type of fertilizer that should be added to grow the designated crop.

			Possible Points	Score
Samples are pulled correctly - process				
Sample			10	
Samples are pulled from correct locations				
Location 1	Yes	No	4	
Location 2	Yes	No	4	
Location 3	Yes	No	4	
Location 4	Yes	No	4	
Location 5	Yes	No	4	
Location 6	Yes	No	4	
Location 7	Yes	No	4	
Location 8	Yes	No	4	
Location 9	Yes	No	4	
Location 10	Yes	No	4	
Analyze Lab Results				
Category	**Level**			
Nitrogen (N)			5	
Potassium (K)			5	
Phosphorus (P)			5	
pH			5	
Fertilizer Recommendation			30	
		Total	100	

_____

Judge's Name Judge's Signature Date

Environmental and Natural Resources
Soil Profile Scorecard – 100 points
PART 1- 60 points

Name: _____ **Participant No.:** _____

State: _____ **Team No.:** _____

Soil Factors – Part 1 *Check Appropriate Box*		Interpretation of Soil Factors *Check Appropriate Box*	
Score		**Score**	
	Texture *Sur.* *Sub.* ☐ ☐ 1. Coarse ☐ ☐ 2. Moderately Coarse ☐ ☐ 3. Medium ☐ ☐ 4. Moderately Fine ☐ ☐ 5. Fine		**E. Permeability** ☐ 1. Rapid ☐ 2. Moderate ☐ 3. Slow ☐ 4. Very Slow
	B. Depth of Soil ☐ 1. Deep ☐ 2. Moderately Deep ☐ 3. Shallow ☐ 4. Very Shallow		**F. Surface Runoff** ☐ 1. Rapid ☐ 2. Moderate ☐ 3. Slow ☐ 4. Very Slow
	C. Slope ☐ 1. Nearly Level 0-1% ☐ 2. Gently Sloping 1-3% ☐ 3. Moderate Sloping 3-5% ☐ 4. Strongly Sloping 5-8% ☐ 5. Steep 8-15% ☐ 6. Very Steep > 15%		**G. Major Factors That Keep Area Out of Class 1** ☐ 1. Texture ☐ 6. Runoff ☐ 2. Depth ☐ 7. Wetness ☐ 3. Slope ☐ 8. Flooding ☐ 4. Erosion ☐ 9. None ☐ 5. Permeability
	D. Erosion – Wind and Water ☐ 1. None to Slight ☐ 2. Moderate ☐ 3. Severe ☐ 4. Very Severe		**H. Land Capability Class** ☐ 1. Class I ☐ 5. Class V ☐ 2. Class II ☐ 6. Class VI ☐ 3. Class III ☐ 7. Class VII ☐ 4. Class IV ☐ 8. Class VIII
	Total Score Column		**Total Score Column**
			Total Score PART 1

Soil Profile Scorecard PART 2- 40 points

Score	Recommended Treatments – Part 2 Check Appropriate Box
	A. Vegetative ☐ 1. Row crop/occasional soil conserving crop ☐ 2. Row crop/frequent soil conserving crop ☐ 3. Row crops not more than 2 out of 4 years ☐ 4. Row crops not more than 1 out of 5 years ☐ 5. Return crop residue to the soil ☐ 6. Practice conservation tillage ☐ 7. Establish recommended grass or grasses & legumes ☐ 8. Proper pasture and range management ☐ 9. Protect from burning ☐ 10. Control grazing ☐ 11. Plant recommended trees ☐ 12. Harvest trees selectively ☐ 13. Use only for wildlife or recreation area **B. Mechanical** ☐ 14. Control brush or trees ☐ 15. Terrace and farm on contour ☐ 16. Maintain terraces ☐ 17. Construction diversion terraces ☐ 18. Install drainage system ☐ 19. Control gullies ☐ 20. No mechanical treatment needed **C. Fertilizer and Soil Amendments** ☐ 21. Soil amendments ☐ 22. Phosphorous [P] ☐ 23. Potassium [K] ☐ 24. Nitrogen [N] ☐ 25. Fertilizer or soil amendments not needed
	Total Score PART 2 -40
	Total Score PART 1 – 60
	GRAND Total Score – 100

Judge's Name Judge's Signature

Environmental and Natural Resources
GPS Location Scorecard – 100 points

Name: _____ **Participant No.:** _____

State: _____ **Team No.:** _____

List your numbers for each location point following the latitude and longitude given.
Note: Variance for differential corrections are noted on condition sheet.

Location Point	Point Number	Possible Points	Score
1		20	
2		20	
3		20	
4		20	
5		20	
		Total Points	

_____

Judge's Name Judge's Signature Date

Environmental and Natural Resources
Environmental Analysis Scorecard – 100 points

Name: _____ **Participant No.:** _____

State: _____ **Team No.:** _____

Your assignment is to analyze the given ecosystem with the following aspects in mind:

Question	Possible Points	Score
1. List ten (10) biotic components that you observed within the marked boundaries of this site.	20	
2. List five (5) abiotic components that you observed within the marked boundaries of this site.	20	
3. List five different relationships (food web) found among the biotic components (from question #1) in this environment.	20	
4. Identify two (2) stages of succession found in this ecosystem.	20	
5. Based on the given scenario, is this a balanced ecosystem? – Yes or No (circle) – Why or Why Not? – Provide two (2) reasons.	20	
Total Score	100	

Judge's Name Judge's Signature Date

Environmental and Natural Resources
Waste Management Scorecard – 100 points

Name: _____ **Participant No.:** _____

State: _____ **Team No.:** _____

Your assignment is to analyze the scenario with Waste Management practices in mind:

Question	Possible Points	Score
Identify and explain the nature of the environmental threat from the waste material.	20	
Identify and explain options for reducing the rate of waste generated, possible recycling or alternative uses for the waste.	20	
Identify and explain possible treatment or disposal of the waste.	20	
Identify and explain a benefit of the option you choose.	20	
Identify and explain a deterrent for the option you choose.	20	
Total Score	100	

Judge's Name Judge's Signature Date

Appendix A: AFNR Career Cluster Content Standards

	Performance Measurement Levels	Event Activities Addressing Measurements	Related Academic Standards
AS.07.02. Performance Indicator: Comply with government regulations and safety standards for facilities used in animal production.			Science: F5
	AS.07.02.01.c. Design a facility that meets standards for the legal, safe, ethical and efficient production of animals.	Team activity	
AS.08.01. Performance Indicator: Reduce the effects of animal production on the environment.			Science: C4 and F4
	AS.08.01.01.b. Outline methods of reducing the effects of animal agriculture on the environment.	Team activity; Water analysis practicum; Waste management practicum	
BS.01.03. Performance Indicator: Analyze the ethical, legal, social and cultural issues relating to biotechnology.			Science: A4 Language Arts: 4, 7 and 8 Social Studies: 10c and 10i
	BS.01.03.01.c. Research, evaluate and articulate the implications of an ethical, legal, social or cultural biotechnology issue.	Team activity	
ESS.01.01. Performance Indicator: Analyze and interpret samples.			Math: 1A, 1B, 4A and 5B Science: A2
	ESS.01.01.01.c. Analyze and interpret results of sample measurements.	All rotational practicums	
	ESS.01.01.02.c. Calibrate and use laboratory and field equipment and instruments according to standard operating procedures.	GPS practicum; Water analysis practicum	
ESS.03.02. Performance Indicator: Apply soil science principles to environmental service systems.			Science: B2, D2 Social Studies: 3k
	ESS.03.02.03.c. Conduct tests of soil to determine its use for environmental service systems.	Soil analysis practicum	
	ESS.03.02.04.c. Design a master land-use management plan for a given area.	Soil profile practicum	
ESS.03.03. Performance Indicator: Apply hydrology principles to environmental service systems.			Science: D2
	ESS.03.03.01.c. Research and debate one or more current environmental issues associated with the supplies of groundwater and surface water.	Team activity; Writing exercise	
	ESS.03.03.04.c. Test and document the quality of groundwater supplies.	Water analysis practicum	

ESS.03.04. Performance Indicator: Apply best management techniques associated with the properties, classifications and functions of wetlands.			Science: C4 and F3 Social Studies: 3c
	ESS.03.04.01.a. Describe the functions of wetlands and differentiate types of wetlands.	Environmental analysis practicum; Team activity	
	ESS.03.04.02.c. Conduct a survey of the predominant species in a local wetland.	Environmental analysis practicum	
	ESS.03.04.03.b. Identify techniques used in wetland management, creation, enhancement and restoration programs.	Team activity	
ESS.04.01. Performance Indicator: Use pollution control measures to maintain a			Science: F4 and F5
	ESS.04.01.01.c. Survey the local area for evidence of industrial and nonindustrial pollution.	Waste management practicum; Team activity	
	ESS.04.01.02.c. Plan and develop a pollution remediation, management or prevention program.	Team activity	
ESS.04.02. Performance Indicator: Manage safe disposal of all categories of solid waste.			Science: F1, F4 and F5
	ESS.04.02.01.b. Evaluate environmental hazards created by different types of solid waste, solid waste accumulation and solid waste disposal.	Waste management practicum	
	ESS.04.02.02.b. Identify characteristics of solid waste treatment and recognize the byproducts of solid waste treatment.	Team Activity	
	ESS.04.02.03.b. Explain basic sanitary landfill operating procedures and design.	Waste management practicum; Team activity	
	ESS.04.02.04.a. Define compost and composting.	Written exam	
ESS.04.04. Performance Indicator: Apply principles of wastewater treatment to manage wastewater disposal in keeping with rules and regulations.			Science: F4 and F5
	ESS.04.04.01.a. Define wastewater.	Written exam	
NRS.01.01. Performance Indicator: Apply knowledge of natural resource components to the management of natural resource systems.			Math: 5a Science: C4 and F3 Social Studies: 3h and 3k
	NRS.01.01.01.c. Research and debate one or more current issues related to the conservation or preservation of natural resources.	Team activity; Writing exercise	
	NRS.01.01.02.c. Conduct a field study of an ecosystem, and record and document observations of species interactions.	Environmental analysis	

NRS.01.02. Performance Indicator: Classify natural resources.			Science: F3
	NRS.01.02.01.c. Conduct a field inventory of trees and other woody plants and record and document findings.	Environmental analysis practicum; GPS practicum; Identification practicum	
	NRS.01.02.02.c. Conduct a field inventory of herbaceous plants and record and document findings.	Environmental analysis practicum; GPS practicum; Identification practicum	
	NRS.01.02.03.c. Conduct a field inventory of wildlife species and record and document findings.	Environmental analysis practicum; GPS practicum; Identification practicum	
	NRS.01.02.04.c. Conduct a field inventory of aquatic species and record and document findings.	Environmental analysis practicum; GPS practicum; Identification practicum	
	NRS.01.02.05.c. Conduct a field inventory of rock, mineral and soil types and record and document findings.	Environmental analysis practicum; GPS practicum; Identification practicum	
NRS.02.02. Performance Indicator: Demonstrate cartographic skills to aid in developing, implementing and evaluating natural resource management plans.			Math: 4B Science: A3 and F2 Social Studies: 3b and 3c
	NRS.02.02.01.c. Employ Global Positioning System and Geographic Information Systems technologies to inventory features in natural resource management.	GPS practicum	
NRS.02.03. Performance Indicator: Measure and survey natural resource status to obtain planning data.			Math: 5C Science: A3 and F2 Social Studies: 3h
	NRS.02.03.01.c. Conduct resource inventories and population studies to assess resource status.	Environmental analysis practicum	

NRS.02.04. Performance Indicator: Demonstrate natural resource enhancement techniques.			Science: F3 Social Studies: 3g and 3k
	NRS.02.04.01.b. Identify indicators of the biological health of a stream.	Environmental analysis practicum; Water analysis practicum	
	NRS.02.04.02.c. Formulate a timber stand improvement plan for a forest.	Team activity	
	NRS.02.04.03.c. Conduct a survey of a habitat and devise a comprehensive improvement plan.	Team activity; Environmental analysis practicum	
	NRS.02.04.05.c. Evaluate the impact of recreational activities on natural resources and create an improvement plan.	Team activity	
NRS.02.06. Performance Indicator: Apply ecological concepts and principles to natural resource systems.			Science: D2 and F3 Social Studies: 3b, 3f and 3h
	NRS.02.06.02.c. Analyze ecosystem functions of a watershed.	Environmental analysis practicum; Team activity; Water analysis practicum	
	NRS.02.06.04.b. Identify techniques used in the creation, enhancement and management of riparian zones and riparian buffers.	Written exam; Team activity; Soil profile practicum; Soil analysis practicum	
	NRS.02.06.05.c. Conduct a field study to determine the stages of ecological succession in a community of organisms.	Environmental analysis practicum	
	NRS.02.06.06.c. Create and implement a management plan based on a population study for a community of organisms.	Team activity; Environmental analysis practicum	
	NRS.02.06.07.c. Develop and implement a plan to reduce the impact of invasive species on natural resources.	Team activity	
	NRS.02.06.08.b. Describe the impact of pollution on natural resources.	Environmental analysis practicum; Team activity; Written exam	
	NRS.02.06.09.b. Describe the impact climate has on natural resources.	Environmental analysis practicum; Team activity; Written exam	
NRS.04.01. Performance Indicator: Manage fires in natural resource systems.			Science: F5
	NRS.04.01.01.b. Describe techniques used to suppress wildfires and manage prescribed fires.	Team activity; Writing exercise	

NRS.04.03. Performance Indicator: Manage insect infestations of natural resources.			Science: C4 and F3
	NRS.04.03.01.c. Describe techniques used to manage pests of natural resources.	Team activity	
NRS.05.01. Performance Indicator: Communicate natural resource information to the public.			Science: F3 and F6 Language Arts: 5, 6
	NRS.05.01.01.c. Communicate a natural resource message through the press, radio, television or public appearances.	Team activity; Writing exercise	
PS.03.04. Performance Indicator: Apply principles and practices of sustainable agriculture to plant production.			Science: F3, F4 and F6
	PS.03.04.01.b. Describe sustainable agriculture practices and compare the ecological effects of traditional agricultural practices with those of sustainable agriculture.	Team activity	
PST.05.03. Performance Indicator: Use geospatial technologies in agricultural applications.			Science: A3, E2, F6 Social Studies: 3c
	PST.05.03.01.a. Identify geospatial technologies, including global positioning, geographical information and remote sensing.	GPS practicum	
CS.01.01. Performance Indicator: Action: Exhibit the skills and competencies needed to achieve a desired result.			Social Studies: 4d and 4h
	CS.01.01.01.c. Work independently and in group settings to accomplish a task.	Team activity	
	CS.01.01.03.c. Implement an effective project plan.	Team activity	
	CS.01.01.06.b. Assign project parts equitably amongst team members to achieve a given task.	Team activity	
CS.01.02. Performance Indicator: Relationships: Build a constituency through listening, coaching, understanding and appreciating others.			Language Arts: 12 Social Studies: 4h
	CS.01.02.02.b. Utilize communication skills to collaborate in a group setting.	Team activity	
CS.01.04. Performance Indicator: Character: Conduct professional and personal activities based on virtues.			Social Studies: 4c and 4f
	CS.01.04.04.c. Demonstrate respect for others.	Team activity	
CS.01.05. Performance Indicator: Awareness: Desire purposeful understanding related to professional and personal activities.			Language Arts: 1 Social Studies: 1e, 4e, 10b and 10j
	CS.01.05.01.c. Articulate current issues that are important to the local, state, national and global communities.	Team activity	

CS.02.02. Performance Indicator: Social Growth: Interact with others in a manner that respects the differences of a diverse and changing society.			Language Arts: 12 Social Studies: 1e
	CS.02.02.02.c. Present oneself appropriately in various settings.	Team activity	
	CS.02.02.03.b. Exhibit the behaviors needed for developing and maintaining a professional relationship.	Team activity	
CS.02.04. Performance Indicator: Mental Growth: Demonstrate the effective application of reasoning, thinking and coping skills.			Math: 6C Science: A4 Language Arts: 4, 8
	CS.02.04.01.c. Demonstrate critical and creative thinking skills while completing a task.	Team activity	
CS.02.05. Performance Indicator: Emotional Growth: Demonstrate healthy responses to one's feelings.			Social Studies: 4a
	CS.02.05.03.c. Exhibit self confidence while in the workplace.	Team activity	
CS.03.01. Performance Indicator: **Communication: Demonstrate oral, written and verbal skills.**			Language Arts: 4, 5 and 12
	CS.03.01.01.c. Demonstrate technical and business writing skills to communicate effectively with co-workers and supervisors.	Writing exercise; Team activity	
	CS.03.01.03.c. Make effective business presentations.	Team activity	
CS.03.02. Performance Indicator: **Decision Making –Analyze situations and execute an appropriate course of action.**			Science: A1 and A5 Social Studies: 1c and 4h
	CS.03.02.01.c. Make decisions for a given situation by applying the decision-making process.	All event areas	
	CS.03.02.02.c. Use problem-solving skills.	All event areas	
CS.03.03. Performance Indicator: Flexibility/Adaptability: Describe traits that enable one to be capable and willing to accept change.			Science: A2, A6 and E2 Language Arts: 7 Social Studies: 8a
	CS.03.03.02.c. Evaluate strategies that can be used to manage change within the workplace.	Team activity	

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

1. Standard and Expectations: Number and Operations
    - 1A. Understand numbers, ways of representing numbers, relationships among numbers and number systems.
    - 1B. Understand meanings of operations and how they relate to one another.
4. Standard and Expectations: Measurement
    - 4A. Understand measurable attributes of objects and the units, systems and processes of 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.
    - 5B. Select and use appropriate statistical methods to analyze data.
    - 5C. Develop and evaluate inferences and predictions that are based on data.

Science

A. Content Standard: Science as an Inquiry
    - A2. Design and conduct scientific investigations.
    - 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
    - B2. Structure and properties of matter.

C. Content Standard: Life Science
    - C4. Interdependence 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

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.

6. Students apply knowledge of language structure, language conventions (e.g., spelling and punctuation), media techniques, figurative language and genre to create, critique and discuss print and non-print texts.

7. Students conduct research on issues and interests by generating ideas and questions and by posing problems. They gather, evaluate, and synthesiSze data from a variety of sources (e.g., print and non-print texts, artifacts, people) to communicate their discoveries in ways that suit 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.

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.

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;
10i. construct a policy statement and an action plan to achieve one or more goals related to an issue of public concern;