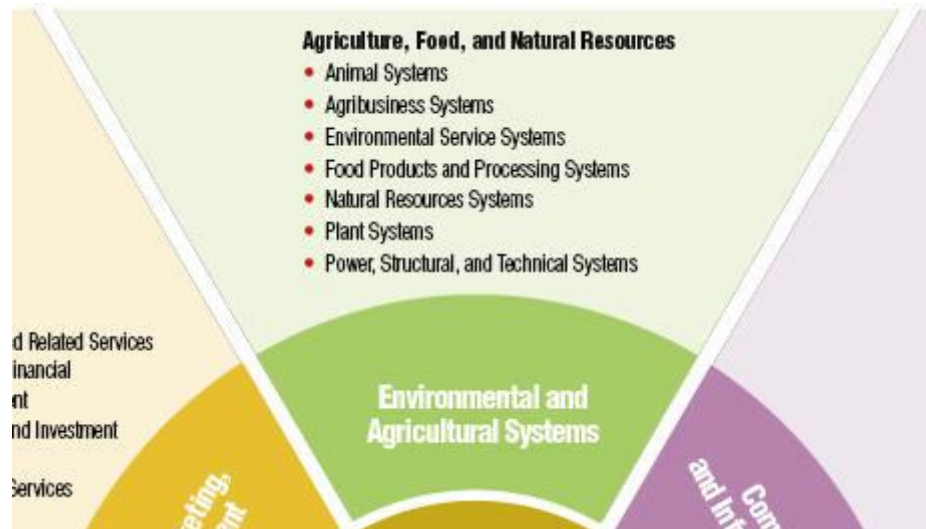




Introduction to Environmental and Agricultural Science Course

Eight Grade Exploratory Ag Science

The Introduction to Environmental and Agricultural Science Course is separated into eight units based on the Career Pathways (Systems) in the Environmental and Agricultural



| # | Lesson Title | 45 min. Class Periods | Lesson Overview | Tools, Equipment, and Supplies | Prior Preparation | Download |
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UNIT A: What is Environmental and Agriculture Science (Introduction Unit)

| | | | | | |
|----|--|---|---|--|---|
| A1 | Introduction to Nebraska Career Education and Environmental and Agricultural Systems | | | | |
| A2 | What are Environmental and Agricultural Systems? | | | | |
| A3 | History of Environmental and Agricultural Systems | 2 | Students take notes and read articles about how life changed for humans because of the introduction of agriculture. Students play %MasterMind+ using the dates of significant changes in agriculture and complete a worksheet while researching historical events that have impacted agriculture. | Blank Printer Paper, Markers, Writing Surface, Activity Sheet 1: enough for ½ the class, Activity Sheet 2: enough for ½ of the class, Activity Sheet 3 & 4: enough for 1 copy per team of 2 or 3 students, Activity Sheet 5: 1 per student, Computer or computer lab capable of playing audio with access to the internet (http://agclassroom.org/gan/media/program.html) or the %Growing a Nation+CD-ROM. | Test to be sure the Growing a Nation will work on your computer. Sound is necessary. Lesson Plan PowerPoint |
| A4 | Role of Environmental and Agricultural Systems | | | | |
| A5 | Biotechnology in Environmental and Agricultural Systems | 5 | This lesson presents an overview of the Food Science Industry. Learners will learn about proper nutrition, create informational flyers on food-borne pathogenic organisms, and create their very own food product label. | Activity Sheets 1 (Make-Your-Own-Sauerkraut PDF) and 2 (1 each per student), Assessment, Assessment Key, Biotechnology PowerPoint, Jeopardy Game PowerPoint See Activity Sheets 1 and 2 for supplies needed. | Lesson Plan PowerPoint Jeopardy PowerPoint Lab Directions |
| A6 | What are Environmental and | 2 | This lesson presents an overview of careers in the | Computer with projector to view PowerPoint. Computer lab with internet | Lesson Plan |



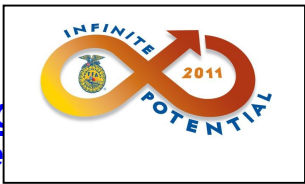
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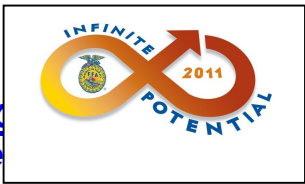
| | Agricultural Careers? | | Environmental and Agricultural field. Learners then complete a career report over one career in the Environmental and Agricultural Field. | access for career report. Activity Sheet 1 (1 per student), Activity Sheet 2 (1 per student). | | PowerPoint |
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UNIT B: Introduction to Agribusiness Systems

| | | | | | | |
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| B1 | Leadership & FFA | | | | | |
| B2 | Defining SAEs | 2 | This lesson presents an overview of Supervised Agricultural Experiences. Students create a brochure about their SAE and learn about proficiency awards. | Computers with web access for brochure development, Attached overheads, Activity Sheet 1 & 2 (1 per student). | | Lesson Plan |
| B3 | Public Speaking | 5 | Students learn public speaking techniques with opportunities to learn The FFA Creed integrated throughout the curriculum. Students will be introduced to the techniques and continuously rehearse the techniques. By the end of the lesson, students have the opportunity to stand and deliver The FFA Creed to their class. This lesson plan is designed so that teachers may use it at the beginning or end of a class period and still cover other curriculum in the class. | FFA Student Handbook, Activity Sheet 1, 2, 3, 4, 5, 6 (one copy per student, each). | This lesson is designed to be taught as part of several classes. The individual class breakdowns are: (3) 25-30 minute lessons; (1) 45 minute lesson; and (1) 15 or 45 minute lesson. | Lesson Plan |
| B4 | Parliamentary Procedure | 5 | Learners will establish awareness about parliamentary procedure, interact with parliamentary procedure leadership skills event | Robert's Rules of Order, Newly Revised, FFA Student Handbooks, The FFA Manual, Student Worksheets 1-4 (1 per student), Pedigrees and Precedence worksheet (1 per student), Student Crossword Puzzle | | Lesson Plan |



| | | | procedures, and practice using parliamentary procedure. | worksheet (1 per student), scratch paper, copy of event rules (1 per student), sample event test, paraphernalia, event evaluation forms | | |
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| B5 | Budgeting Income and Expenses | 1 | This lesson presents a brief overview of budgeting and tracking income and expenses within a SAE program or project. | Nebraska SAE Record Book, included PowerPoint, Activity Sheet 1 (1 per student), included video clip entitled %nterest Approach+. | | Lesson Plan PowerPoint Interest Approach Video |
| B6 | Using Assets and Liabilities to determine Net Worth | 2 | This lesson presents an overview of the key components in determining net worth. Learners then complete a personal balance sheet as well as an activity/assessment. | Nebraska SAE Record Book, Activity Sheet 1 (1 per student), Activity Sheet 2 (1 per group or 8-10), Activity Sheet 3 (1 per student). | | Lesson Plan PowerPoint |
| B7 | SAE Record Keeping Applications | | | | | |
| B8 | Attitude, Character, and Ethics in the Workplace | 2 | This lesson will serve as an overview of the motivation, values, and principles necessary to enhance character and leadership development. | Activity Sheet 1 (1 per student), Activity Sheet 2 (1 per student). | | Lesson Plan PowerPoint |
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| UNIT C: Introduction to Power, Structure, and Technical Systems | | | | | | |
| C1 | Safety in Agriculture | 3 | This lesson is an overview of the general safety practices to be followed in the agriculture education laboratory. | Rake; Computers with internet access for MSDS search, Activity Sheets 1-4 (1 per student), Assessment 1 (1 per student). | | Lesson Plan PowerPoint |
| C2 | Units of Measure | 1 | This lesson presents an overview of the various measurement systems used in the agricultural mechanics industry. Students will practice | Textbooks, Activity Sheet 1 (1 per student), writing utensils, length measurement devices (steel tapes, rulers). | | Lesson Plan PowerPoint |



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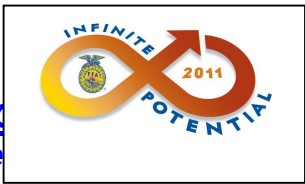
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| | | | converting various measurements to other units of measure. | | |
| C3 | Measuring Devices | 2 | This lesson presents an overview of the various measuring devices used in the agricultural mechanics industry. Students will practice using several measuring devices to take measurements in the agriculture mechanics laboratory. | Textbooks, Activity Sheet 1, Assessment 1, Writing Utensils, Measuring Devices (Steel Tapes, Rulers, Framing Square etc.) scissors, string. | Lesson Plan PowerPoint Activity Sheet Key |
| C4 | Hand Tools | 1 | This lesson presents an overview of hand tools and their use in Environmental and Agricultural Science. | 15 types of hand tools (bevel, steel tape, handsaw, cold chisel, tin snips, round file, tap wrench, twist drill, c-clamp, etc), Activity Sheet 1 (1 per student). | Lesson Plan |
| C5 | Portable Power Tools | 3 | This introductory lesson presents an overview of the various portable power tools used in the agricultural mechanics industry. Students will identify and demonstrate precautionary safety practices while using portable power tools after correctly identifying and classifying power tools. | Computers with internet, Laminator, Safety glasses, Examples of Portable Power Tools, Activity Sheet 1 (1 per student). | Lesson Plan Interest Approach Video |
| C6 | Stationary Tools | | | | |
| C7 | Oxyfuel Welding and Cutting | | | | |
| C8 | SMA Welding | | | | |

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UNIT D: Introduction to Plant Systems

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| D1 | Industries within Plant Systems | 1 | This lesson presents an overview of the seven areas of Plant Systems. Learners then complete a career report over one career from Plant Systems. | Plant materials for interest activity, computers with internet access for career report, Activity Sheets 1 and 2 (1 each per student). | Plant materials may be obtained in advance. | Lesson Plan Rubric Spreadsheet |
| D2 | Plant Structures | 4 | This lesson presents an overview of the importance of plants; the main parts of a plant; the types of each of the plant parts; and the relationship of each part to fruits, nuts, and vegetables. | One copy of each of the plant part names to place on wall; Activity Sheets 1-5 (1 per student), scissors, glue, and colored pencils for each student; fruit and vegetable samples (provided by students or you); Assessment 1 (1 per student). | Fruit and vegetable samples must be collected in advance. | Lesson Plan PowerPoint |
| D3 | Plant Physiology | 4 | This lesson covers plant processes including photosynthesis, respiration, and transpiration. | Computer, LCD, Handouts, Interest Approach Supplies (pots, 10 corn seeds, potting soil), Activity Sheet 1-3 (1 per student), Photosynthesis and/or Respiration Video (optional), Lab supplies (optional) | Prepare materials for the corn growing activity in advance. | Lesson Plan PowerPoint Jeopardy PowerPoint Lesson Plan |
| D4 | Plant Reproduction | 3 | This lesson presents an overview of how plants are propagated. Upon completion of this unit students will know how to propagate plants both sexually and asexually. | Activity Sheet 1-2 (1 per student), Seeds (Monocot/Corn and Dicot/Soybeans), Paper Toweling, Clear container(s), Water, Model . (picture) of a complete flower . Florist or garden flowers will work ex. . Lilies, Stock Plants for asexual Propagation . Swedish Ivy, Wandering Jew, Golden Pothos, 6 inch Azalea Pot, Tape, Permanent Marker, Growing Medium for each pot, a clear plastic bag for each pot, Rooting hormone. | See tool list and activities for advance preparation. The lesson can be taught without all supplies. | Lesson Plan |



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UNIT E: Introduction to Food Products and Processing Systems

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| E1 | The Food Industry | 2 | This lesson presents an overview of the major food commodity groups, different operations, and careers within the food industry. | One poster board or freezer paper per small group, markers, various food products processed in the state (provided by you or students), one tri-fold display board per two or three students, computers with Internet access and colored printers, scissors, glue, and Assessment 1 and Activity Sheet 1 (1 per student). | Have students bring food products by announcing the assignment in advance. | Lesson Plan |
| E2 | Food Science | 2 | This lesson presents an overview of the Food Science Industry. Learners will learn about proper nutrition, create informational flyers on food-borne pathogenic organisms, and create their very own food product label. | Computers with internet access for Most Unwanted Organism Flyer, crayons, markers, and other art supplies for the product development activity, Activity Sheets 1-7 (1 per student). | | Lesson Plan PowerPoint |

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UNIT F: Introduction to Animal Systems

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|----|---|---|--|---|--|---|
| F1 | Animal Anatomy, Physiology, and Nutrition | | | | | |
| F2 | Animal Health | 4 | Upon completion of this lesson, students will identify signs of good health and symptoms of poor health, as well as understand preventive measures and treatment options for animals under their care. | Activity Sheets 1-3 (1 per student), Agriscience Lab Manual . Exercise 39, Agriscience Lab Manual . Exercise 41, Agriscience Lab Manual . Exercise 42, PowerPoint Presentation or Actual Equipment, Reading Drug Labels Worksheet, Drug Labels and/or Boxes | See the Agriscience Lab Manual and the lesson for Lab-specific supplies. | Lesson Plan PowerPoint |



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| F3 | Genetics, Breeding, and Reproduction | 4 | This lesson presents an overview of the role of genetics, breeding, and reproduction in animal agriculture. | Computer, Multimedia Projector, Activity Sheet 1 (1 copy of Unit Notes Outline per student), Activity Sheet 2 (1 per student), Teacher Sheet 2 (1 copy. cut apart), 2 %omethings+to draw genes from, colored pencils, Activity Sheet 3 (4 copies of each cow picture horned and polled), Activity Sheet 4 (1 per student), and Assessment 1 (1 per student). | | Lesson Plan PowerPoint |
| F4 | Small Animal Care and Management | | | | | |
| F5 | Food Animal Management | 2-7 | Upon completion of this lesson learners will understand the historic and economic implications of the livestock industry to our state and nation. Learners will also recognize the best management practices for the food animal species; as well identify the important breeds of each species. | Computer, LCD Projector, Activity Sheet 1-6 (1 per student). | Review this lesson in advance. Many teachers will want to piece it out based on student interest. | Lesson Plan PowerPoint |
| F6 | Horse Management | 3 | This introductory lesson presents an overview of the horse industry including classification, breeds, colors, tack and history of horses used in the United States. | Computers with internet, Laminator, Agriscience books, projector, Activity Sheet 1 (1 per student). | | Lesson Plan Jeopardy PowerPoint |

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UNIT G: Introduction to Natural Resource Systems

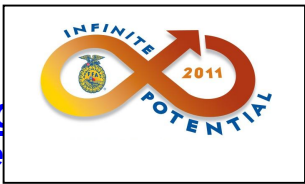
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| G 1 | Introduction to Natural Resource | 2 | This lesson presents an overview of Natural | Construction Paper, Scissors, Glue/Rubber Cement, Farm/Old Magazines, Included | | Lesson Plan |
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| | Systems | | Resources. Learners then complete a poster identifying and classifying Natural Resources. | PowerPoint, Activity Sheet 1-2 (1 per student), Assessment 1 (1 per student). | PowerPoint |
| G 2 | Air Quality | 2 | Learners will identify sources of air pollution, explain the greenhouse effect, and detail procedures for improving and maintaining air quality. | Stop watch, quart jar with lid, thermometer, poster board, markers, magazines that pictures can be cut from, scissors, tape or glue, Activity Sheet 1 (1 per student), Activity Sheet 2 (1 per student). | Lesson Plan PowerPoint |
| G 3 | Water and Soil Conservation | 3 | Students learn about the relationship between land and water, potential threats to water, soil erosion factors, and conservation of both resources. They perform an in-depth activity to experience pollution and take a quiz. | Earth as an Apple activity (Apple, Knife, World Map, Labels, Pie Chart), crayons or markers, Activity Sheet 1 (1 per student), Teacher Sheet 1, Activity Sheet 2 (1 per student), Who Dirtied the Water supplies (22 Dixie Cups, 22 Rubber Bands, 6 Paper Towels, Felt Tip Marker, 1 Large Jar filled 1/2 full with Tap Water, 1 Stir Stick, small samples to fill Dixie cup 1/4 full of: wood chips, sand, charcoal, dried grass, crushed shells/shell macaroni, organic garbage, nails, potting soil, nylon fishing string, toilet paper, colored paper, newspaper, plastic pieces from a pop bottle, Styrofoam, powdered detergent, engine oil, molasses, vinegar). | Prepare, or have a Teacher assistant prepare, the Who Dirtied the Water supplies in advance. Lesson Plan PowerPoint |
| G 4 | Soils Management | 3 | This lesson presents an overview of soil management. Students will evaluate soils samples for capability, physical characteristics and texture. | Soils PowerPoint, Activity Sheet 1 . Sedimentation Lab (1 per student), Activity Sheet 2 . Terms (1 per student), Activity Sheet 3 . Power Point Skeleton Notes (1 per student), Activity Sheet 4 - Texture Triangle (1 per student), Assessment 1 (1 per student), Samples that include, 2- 5 quart plastic ice cream buckets each of sand, silt and clay, 2-3 random samples, Styrofoam or paper plates, Rolling Pin (used to fracture clay and silt particles), 8% Calgon Solution, Measuring Cups, 4 Quart jars with lids, Metric Ruler, Tablespoons. | Laboratory supplies should be prepared in advance. Lesson Plan PowerPoint |
| G 5 | Forest Management | 2 | This lesson presents an overview of ecosystems of a forest. Upon completion | Forestry Power Point, Activity Sheet 1 (1 per student), Activity Sheet 2 (1 per student), Assessment 1 (1 per student), Forest products- | May choose to purchase What Tree is That? +The National Arbor Day Foundation . 1-888-448-7337. Lesson Plan |



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| | | | of this unit students will know the dynamics of forestry management. | leaves, cones, wood, branches, 10 Examples of trees or tree mounts . You may need multiple examples for the identification lab. | (\$3.00 + SH 35 for \$25 + SH) | PowerPoint |
| G 6 | Wildlife Management | 3 | This lesson presents an overview of Wildlife Management. Learners will identify characteristics of wildlife, relationships between wildlife, identify approved practices in wildlife management and research a wildlife animal. | Activity Sheets 1, 2, & 3 (one per student, each), Activity Sheet 4 (optional- one per student), Assessment 1 (one per student), note cards (3-5 per student), accompanying PowerPoint. | | Lesson Plan PowerPoint |
| | | | | | | |
| # | Lesson Title | 45 min. Class Periods | Lesson Overview | Tools, Equipment, and Supplies | Prior Preparation | Download |
| UNIT H: Introduction Environmental Service Systems | | | | | | |
| H1 | Sources and Groups of Environmental Pollutants | 4 | This lesson presents an overview of the sources, groups, and types of pollutants affecting the environment. In addition, learners will take an active part in being the pollution solution+rather than the problem. | TV, VCR, Computer, Multimedia Projector, Internet, Video Cameras, Recordable Tapes or DVDs for Cameras, Activity Sheet 1 (1 per student), Assessment 1 (1per student), Assessment 2 (1 copy per student). | | Lesson Plan PowerPoint |
| H2 | Careers within Environmental Health | 1 | This lesson presents an overview of the careers available within Environmental Health. | Computers with web access for newspaper development, Activity Sheet 1 (one per student), Activity Sheet 2 (one per student). | | Lesson Plan Brochure |