



Career Cluster Connections Cover Page Agriculture, Food and Natural Resources

Career Cluster: Agriculture, Food and Natural Resources

Postsecondary Education Partnerships

Existing Postsecondary Education Partners:

South Dakota State University
 Lake Area Technical Institute
 Mitchell Technical Institute
 Southeast Technical Institute
 Western Dakota Technical Institute

Potential Postsecondary Education Partners:

Online and out of state partners
 Sitting Bull College
 Oglala Lakota College

Dual Credit Opportunities:

LATI-Soil Science
 LATI-Crop Science
 LATI-Seed and Grain Technology
 LATI-Animal Science
 STI-Welding Theory Class-
 STI-Soils
 MTI-Animal Science I
 MTI-Weeds & Herbicides
 MTI-Machinery Management
 MTI-Ag Chemicals
 MTI-Soil Science I
 MTI-Ag Chemistry
 MTI-Agronomy
 MTI-Welding
 MTI-Ag Law

Work-Based Learning

Career Exploration:

Coursework
 Conduct interview (producers, veterinarians, mechanics, agronomist, etc.)
 Guest Speakers
 Career Fairs
 Career Development Events

Intermediate Experiences:

Job shadowing
 Internships



Capstone Experiences:
 Supervised Agriculture Experience
 Senior Projects
 Entrepreneurship

Experiential Learning

<p>Career and Technical Student Organizations and Key Activities (competitions, events, etc.): National FFA Organization</p> <ul style="list-style-type: none"> • Range Judging • Range Plant Identification • Land and Homesite Judging • Ag. Broadcasting • Ag. Sales • Job Interview • Parliamentary Procedure <ul style="list-style-type: none"> ○ Junior Parliamentary Procedure • Prepared Public Speaking • Creed Speaking • Ag. Issues • Ag. Communications • Extemporaneous Speaking • Marketing Plan • Ag. Business Management • Dairy Cattle Judging • Horse Evaluation and Selection • Milk Quality and Products • Ag. Mechanics • Floriculture • Livestock Evaluation • Natural Resources • Vet Science • Food Science and Technology • Meats Evaluation and Technology • Nursery Landscape • Biotechnology • Agriscience Fair Project • Proficiency Awards • Star Awards • Big Idea Contest • Enviro-thon 	<p>Course and CTE Standards Supported:</p> <ul style="list-style-type: none"> • Advance Ag. Structures Technology • Advance Animal Science • Advance Horticulture • Advance Natural Resources • Advance Plant Science • Ag. Biotechnology • Ag. Leadership and Communications • Ag. Metal Fabrication • Ag. Processing Technology • Ag. Systems Technology • Agribusiness Management • Agribusiness Sales and Marketing • Companion Animals • Food Science • Fundamental Ag. Mechanical Technologies • Fundamental Ag. Structures Technology • Fundamental Animal Science • Fundamental Horticulture • Fundamental Natural Resources • Fundamental Plant Science • Introduction to Agriculture, Food, and Natural Resources • Middle School Agriculture, Food, and Natural Resources • Wildlife and Fisheries
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<p>Service Learning Opportunities/Organizations:</p> <p>National FFA Organization</p> <ul style="list-style-type: none"> • Day of Service • National Chapter Award <p>Community Service/Volunteer work</p> <ul style="list-style-type: none"> • Examples <ul style="list-style-type: none"> ○ Local churches ○ Salvation Army ○ Boys and Girls Club ○ Local Humane Society ○ Food Pantries ○ PALS ○ Agriculture in the Classroom 	<p>Course and CTE Standards Supported:</p> <ul style="list-style-type: none"> • Advance Ag. Structures Technology • Advance Animal Science • Advance Horticulture • Advance Natural Resources • Advance Plant Science • Ag. Biotechnology • Ag. Leadership and Communications • Ag. Metal Fabrication • Ag. Processing Technology • Ag. Systems Technology • Agribusiness Management • Agribusiness Sales and Marketing • Companion Animals • Food Science • Fundamental Ag. Mechanical Technologies • Fundamental Ag. Structures Technology • Fundamental Animal Science • Fundamental Horticulture • Fundamental Natural Resources • Fundamental Plant Science • Introduction to Agriculture, Food, and Natural Resources • Middle School Agriculture, Food, and Natural Resources • Wildlife and Fisheries • Supervised Agriculture Experience • Senior Experience
<p>Additional Experiential Learning Opportunities:</p> <p>National FFA Organization</p> <ul style="list-style-type: none"> • Chapter Officer Training • District Officer Training • Leadership Camp • Washington Leadership Conference 	<p>Course and CTE Standards Supported:</p> <ul style="list-style-type: none"> • Advance Ag. Structures Technology • Advance Animal Science • Advance Horticulture • Advance Natural Resources



<p>Girls State Boys State HOBY 4-H Empower Youth Leadership Program Farmers Union Education Programs Farm Bureau Youth Education Programs Youth Business Adventure Farm Safety Camps Student Council</p>	<ul style="list-style-type: none"> • Advance Plant Science • Ag. Biotechnology • Ag. Leadership and Communications • Ag. Metal Fabrication • Ag. Processing Technology • Ag. Systems Technology • Agribusiness Management • Agribusiness Sales and Marketing • Companion Animals • Food Science • Fundamental Ag. Mechanical Technologies • Fundamental Ag. Structures Technology • Fundamental Animal Science • Fundamental Horticulture • Fundamental Natural Resources • Fundamental Plant Science • Introduction to Agriculture, Food, and Natural Resources • Middle School Agriculture, Food, and Natural Resources • Wildlife and Fisheries • Supervised Agriculture Experience • Senior Experience
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Certification and Credentials

Certification/Credential	Recommended Prerequisite Courses	Pertinent Details (location of assessment, cost, test prep, etc.)
OSHA 10 Hour Safety Certification (Agricultural, Construction Industry, or General Industry)	Fundamental Ag. Structures	Careersafeonline.com (\$25)
National Career Readiness Certificate (NCRC)	NA	South Dakota Department of Education
Pesticide Applicator	Fundamental	County Extension or South Dakota



Certification	or Advance Plant Science	Department of Agriculture (Private applicator-\$0, Commercial applicator-\$25-\$50)
Certified Welder (AWS)	Fundamental of Ag. Mechanics or Metal Fabrication	American Welding Society: http://www.aws.org/certification/
Registered Parliamentarian	Introduction to Agriculture, Food, and Natural Resources or Leadership and Communications	www.parliamentarian.org/services/accreditation (\$150)
Youth Humane Equine Management	Companion Animals or Fundamental Animal Science	animalcaretraining.org (Free)
ServSafe Food Handler Certification	Food Science or Introduction to Agriculture, Food, and Natural Resources	Servsafe.com (\$15)
Beef Quality Assurance	Introduction to Agriculture, Food, and Natural Resources or Fundamental Animal Science	animalcaretraining.org (\$25)
Youth Pork Quality Assurance	Introduction to Agriculture, Food, and Natural Resources or Fundamental Animal Science	old.pork.org
Youth Beef Quality Assurance,	Introduction to Agriculture, Food, and Natural	animalcaretraining.org



	Resources or Fundamental Animal Science	
Youth Beef Industry Food Safety	Introduction to Agriculture, Food, and Natural Resources or Fundamental Animal Science	animalcaretraining.org
Youth Dairy Animal Care and Quality Assurance	Introduction to Agriculture, Food, and Natural Resources or Fundamental Animal Science	animalcaretraining.org
Youth Humane Equine Management	Introduction to Agriculture, Food, and Natural Resources or Fundamental Animal Science	animalcaretraining.org

Key Resources:

Curriculum Agricultural Science Education (CASE)

- Introduction to Agriculture, Food, and Natural Resources
- Principles of Agricultural Science-Animal
- Principles of Agricultural Science-Plant
- Agricultural Power and Technology
- Natural Resources and Ecology
- Animal and Plant Biotechnology
- Food Science and Safety
- Environmental Science Issues
- Agricultural Research and Development
- FFA.org
 - Educators Resources
 - Renewable Fuels Lesson Plans and Student Module Course
 - Professional Growth Handbook
 - Introduction to Food Science Curriculum



- Welding Connects Your World
- Agricultural Risk Management Instructional Materials
- Agri-Entrepreneurship
- Financial Planning and Management
- LifeKnowledge lessons
- Today's Challenges; Today's Leaders: Focusing on Diversity, Hunger, Advocacy and Sustainability
- Middle School Food and Agricultural Literacy Curriculum: Educators Resources
- My Journey Curriculum through National FFA Organization:
<https://www.ffa.org/my-journey>
- National FFA Proficiency Handbook:
[https://www.ffa.org/sitecollectiondocuments/prof handbook.pdf](https://www.ffa.org/sitecollectiondocuments/prof%20handbook.pdf)
- FFA Student Handbook
- FFA Official Manual
- FFA Agriscience Manual
- Show livestream and archived Leadership Development Events (LDEs) from National Convention Finals Hall.
- SAE Ideas Card Set (FFA Store)
- Professional Growth Handbook (Educators Resources in ffa.org)
- Agriculture Sales Video (National FFA, Educator Resources)
- Farm and Ranch Business Management Book (Shop ffa.org)
- Farm and Ranch Business Management Student Guide (Shop ffa.org)
- Agribusiness Management Lesson Plan Library CD (Shopffa.org)
- Textbook
 - Merck Vet Manual
 - Introduction to Agronomy, Food, Crops, and Environment textbook (Cengage)
 - Plant & Soil Science: Fundamentals and Applications by Rick Parker (Delmar Cengage Learning)
 - Principles of Agriculture, Food, and Natural Resources by Rayfield, Smith, Park, and Croom (Goodheart-Wilcox Publisher)
 - Lab Safety Manuals
 - Introduction to Biotechnology: An Agricultural Revolution by Ray Herren (has lab activities and chapter reviews in each chapter) (Delmar Cengage Learning)
 - Agribusiness Fundamentals and Applications textbook (Cengage)
 - Small Animal Care and Management, Dean Warren
 - Introduction to Food Science textbook (Delmar)
 - Modern Livestock and Poultry Production, Gillespie and Flanders
 - Management Our Natural Resources textbook (Delmar)
 - Modern Livestock and Poultry Production textbook (Cengage)



- Introduction to Biotechnology: An Agricultural Revolution by Ray V. Herren (Thomson-Delmar Learning)
- Introduction to Food Science textbook (Delmar)
- Leadership: Personal Development and Career Success textbook (Cengage)
- Robert's Rule of Order
- Parliamentary Procedure Made Easy textbook
- Introductory Horticulture Textbook (Cengage)
- *Videos/Episodes*
 - *How It's Made* episodes
 - *Modern Marvels* episodes (Cheese, Milk, Candy, Ice Cream, The Butcher, Harvesting, Harvesting 2, Snackfood Tech, Fast Food Tech, Food Truck, Mega Meals)
 - *Dirty Jobs* episodes
 - Theodore Roosevelt: Conserving America's Future Youtube Video
- Websites:
 - The AET: <http://www.theaet.com/>
 - National Agriculture in the Classroom: www.agclassroom.org
 - Character Counts: <https://charactercounts.org>
 - Ag Explorer: agexplorer.com
 - Food Safety and Nutrition Education Curriculum: <http://www.teachfoodscience.org/curriculum.asp>
 - Food Science for Kids of All Ages!: Resources for Teachers: <http://foodscience.psu.edu/youth/educators>
 - Institute Food Technologists: <http://www.ift.org/knowledge-center/learn-about-food-science/k12-outreach.aspx>
 - Food Safety Scientist: <http://igrow.org/healthy-families/food-safety/food-safety-scientist/>
 - Unleashing a Decade of Innovation in Plant Science: A Vision for 2015-2025 (www.plantsummit.files.wordpress.com)
 - 2016 State Agriculture Overview: South Dakota (https://www.nass.usda.gov/Quick_Stats/Ag_Overview/stateOverview.php?state=south%20dakota)
 - Colorado Plant Science Curriculum - <http://ffa.cccs.edu/colorado-plant-and-animal-science-curriculum/>
 - Project WILD: www.projectwild.org
 - Project Wet: www.projectwet.org
 - Project Learning Tree: www.plt.org
 - NRCS
 - www.thisoldhouse.com
 - www.vspn.org
 - www.dreveterinary.com
 - www.rulergame.net
 - www.gaaged.org



- www.yqca.org
- www.igrow.org
- <http://www.ansi.okstate.edu/breeds>
- www.Grandin.com

- Business/Professional Resources (Seek out Websites)
 - U.S. Fish and Wildlife Service
 - South Dakota Game, Fish, & Parks
 - Bureau of Land Management (BLM)
 - Outdoor Lab/Test Plot with local producer or Research Company
 - American Welding Society (AWS)
 - Local Vet Clinic
 - POET
 - Butler
 - Monsanto
 - CHS
 - EROS Data Center
 - U.S. Forest Service
 - John Deere
 - Case IH
 - Lincoln Welding
 - Briggs & Stratton

- Other Useful Resources:
 - Ag Education Discussion Lab (Facebook)
 - Communities of Practice (Various Spaces) online
 - Use virtual labs.
 - Lake and Stream Ecology Workshop
 - Habitudes
 - StrengthsFinder
 - Tour a feed mill
 - Tour a vet clinic
 - 4D Vision Animal Models
 - MyCAERT Curriculum
 - Google Earth
 - Quizlet: Flashcards
 - OSHA 10 Hour Certification Training
 - Serv Safe Certification
 - Grainbridge Curriculum
 - Chemical Cuisine: Natural and Synthetic Chemicals in Foods by Center for Chemistry Education, Miami University Middletown, Middletown, Ohio (Carolina)
 - Dairy Foods Curriculum by Sheri L. Kahnke and Dr. Robert Baer



- Invite a feed nutritionist to class
- Livestock Sales Catalogs to look at Production Data (Ex. Weights, age of maturity, carcass data, EPDs, pedigrees, etc.)- Seek out to Breed associations or local farms in area.
- Leaf Snap application