

Appendix I

AGRICULTURE, FOOD & NATURAL RESOURCES (AFNR) YOUTH APPRENTICESHIP

COURSE OUTCOME SUMMARY: OVERVIEW AND TABLE OF CONTENTS

Agriculture, Food and Natural Resources (AFNR) Youth Apprenticeship Course Outcome Summary

Course Information

Organization	Cooperative Educational Service Agency 6 (CESA 6)
Developers	Tania Kilpatrick
Development Date	2016

Description

This curriculum describes the performance-based worksite Competencies, Performance Standards, and Learning Objectives for the Wisconsin Youth Apprenticeship (YA) Program in Agriculture, Food and Natural Resources (AFNR). The Wisconsin AFNR YA Program is designed to provide students with a working understanding of core industry skills and occupationally specific technical skills that serve as the standard for occupations in the AFNR industry. This program provides the framework for educators and industry to work together to produce work-ready, entry-level employees that will compete favorably in a global market, as well as, provide for post-secondary educational advancement while integrating work-based learning in the school and worksite.

The Agriculture, Food and Natural Resources (AFNR) competencies are aligned with the learning objectives in the Learning Libraries from the Center for Agricultural and Environmental Research and Training (<http://www.caert.net/>) and the standards and knowledge statements outlined in the National Association of State Directors of Career Technical Education Consortium (NASDCTEc) Standards (<http://www.careerclusters.org/>) in four of the seven AFNR Pathways; Animal Systems, Environmental Systems, Plant Systems, and Power, Structural & Technical Systems. AFNR YA students are required to perform all of the Core and Safety skills for the pathway they enroll in. **Level One (one year)** AFNR YA students are also required to complete additional competencies in the applicable Pathway Basics Unit. **Level Two (two year)** AFNR YA students are to choose another specific unit, Large Animal/Herd, Small Animal/Vet Assistant, Crops, Greenhouse/Floral, Landscaping, Advanced Water Resources, or Agriculture Mechanics Technician based on their pathway, area of interest, and their worksite placement.

EACH competency (work site skill) is listed with its corresponding Performance Standards and Learning Objectives in the Appendices. The Performance Standards describe the behaviors, **as applicable**, that employers should look for in order to evaluate the competency. The Learning Objectives describe the classroom learning content recommended for the required related technical instruction.

Curriculum Sources

- Business and Industry Curriculum Advisory meetings for AFNR Power, Structural and Technical Systems: 11/13/2015, 12/18/2015, and 03/11/2016. Facilitated by Tania Kilpatrick.
- California K12 Agriculture and Natural Resource Standards, May 2005, for Agricultural Business, Agricultural Mechanics, Agriscience, Animal Science, Ornamental Horticulture, and Plant & Soil Science. <http://www.cde.ca.gov/ci/ct/sf/documents/ctestandards.pdf>. Accessed July 2009.
- Center for Agricultural and Environmental Research and Training (CAERT) Learning Libraries for Agribusiness, Animal, Plant, & Soil Science, Environmental Resources, Agricultural Mechanics & Technology, and Horticulture. <http://www.caert.net/>. Accessed September 2009 – May 2010. [Note: CAERT requires password – do we still want/need to list?]
- Dane County YA Consortium meeting with Agricultural professionals regarding YA students and Vet/Small Animal and Horticulture/Greenhouse curriculum. Meeting November 5, 2009.
- DACUM (Developing a Curriculum) Advisory Board Meeting for Water Resources 11/27/2012. Facilitated by Robin Kroyer-Kubicek, conducted at Milwaukee Area Technical College.
- Gateway Technical College (2010) Course Outcome Summary for Fresh Water Treatment (607-183), Watershed Hydrology & Conservation (607-181), Sampling & Testing (607-182), and Waste Water Treatment (607-185).
- Green Bay Metropolitan Sewerage District pilot YA program in Wastewater Management developed 2012.
- Illinois Occupational Skill Standards for Row Crop Production, Beef Production, Swine Production, Agricultural Mechanics. <http://eric.ed.gov/?id=ED448356>. Accessed July 2009.
- Madison Technical College Course Outcome Summary for Lab Animal Caretaker, 2008.
- Madison Technical College Veterinary Faculty staff meeting. Meeting October 26, 2009.
- Manitowoc Public Utility, Water Operator Training Syllabus, November 2012.
- Milwaukee Area Technical College, Horticulture Advisory Committee meeting. Meeting November 10, 2009.
- Milwaukee Area Technical College, Ornamental Plant Health Care, 001-113, July 15, 2009.
- Milwaukee Water Council, Lead to Succeed “Water 101” Curriculum Resource Guide, October 2012.
- National Association of State Directors of Career Technical Education Consortium (NASDCTEc) Career Clusters, Agriculture, Food, and Natural Resources Career Cluster Knowledge and Skills charts for Animal Systems, Plant Systems, and Agribusiness Systems. <http://www.careerclusters.org/>. Accessed July 2009 and August 2012.
- National Council for Agricultural Education, National Agricultural, Food, and Natural Resources (AFNR) Career Cluster Standards, 2009.
- Ohio State University, Center of Education and Training for Employment, DACUM for Greenhouse Growers (2002), Crop Rotation Systems, Dairy, Livestock & Field Crops (2003), and Goat Production (2007).
- Oklahoma Career Tech Skills Standards and Assessment for Agricultural Core Education (2007), Veterinary Assistant (2004), and Animal Science Animal Production Assistant (2006).
- Texas State Technical College- Waco, DACUM for Horticulture and Landscaping Technician, January 2002.
- U.S. Department of Labor Water Sector Competency Model. www.doleta.gov. Accessed July 2012.
- Wisconsin Department of Agriculture, Trade, and Consumer Protection Agricultural Education and Workforce Development Council meeting. Meeting October 29, 2009.

- Wisconsin Administrative Code, Department of Workforce Development, Chapter 270, Child Labor, and Wisconsin State Statutes Chapter 106, Apprentice, Employment and Equal Rights Program, June 2, 2007, and Chapter VE1, VE7-9 Veterinary Examining Board statutes, 2009.
- Wisconsin Department of Natural Resources, Introduction to Preliminary & Primary Treatment Study Guide (August 1991) and Introduction to General Wastewater Study Guide (December 2011).
- Wisconsin Department of Regulation and Licensing, Veterinary Technician Credentialing, 2009.
- Wisconsin Department of Public Instruction, Model Academic Standards for Agricultural Education, May 2013. http://dpi.wi.gov/sites/default/files/imce/cte/pdf/ag_standards.pdf.
- Wisconsin Department of Public Instruction, Skill Standards Co-op for Agribusiness – Animal and Plant Science. September 2009.
- Wisconsin Department of Workforce Development, AFNR Youth Apprenticeship Advisory Committee, formed September 2009 for the purpose of revising and updating the Production Agriculture Youth Apprenticeship curriculum.
- Wisconsin Department of Workforce Development, Water Resources Youth Apprenticeship Advisory Committee, formed September 2012 for the purpose of adding a Water Resources pathway to the AFNR Youth Apprenticeship curriculum.
- Wisconsin Department of Workforce Development Production Agriculture Youth Apprenticeship Survey dated July 2009, and the subsequent Advisory Committee, formed September 2009 for the purpose of revising and updating the Youth Apprenticeship curriculums.
- Wisconsin Department of Workforce Development, Production Agriculture- Animals and Production Agriculture- Soils and Crops Youth Apprenticeship curriculum dated June 2006.
- Wisconsin Department of Workforce Development, Bureau of Apprenticeship Standards for Registered Apprenticeship in Wastewater Treatment Plant Operator April 2012.
- Wisconsin Technical System Course Outcome Summary for Animal Science (10-006-1, 2005), Agribusiness Sales & Marketing (2003), Introduction to Horticulture (2003), Introductory Soils (2005), Farm Business Management Planning (1999), and Livestock & Dairy Operations Management.
- Worknet Occupation Task Lists for Animal Breeder, Farm Worker- Farm & Ranch Animals, General Farm Workers, Landscaping and Grounds-keeping Workers, Nursery Workers, Tree Trimmers and Pruners, and Veterinary Technologists & Technicians, Environmental Engineering Technicians, Hydrologists, Wastewater Treatment Plant Operators, and Farm Equipment Mechanics and Service Technicians. <http://worknet.wisconsin.gov/worknet/default.aspx>. Accessed December 2009, July 2012, and August 2016.

The initial AFNR curriculum was developed through a Grant from the Wisconsin Department of Workforce Development to the University of Wisconsin-Oshkosh's Center for Career Development and Employability Training (CCDET)

Furthermore, parts of this product were funded by an additional grant awarded under the Workforce Innovation in Regional Economic Development (WIRED) Initiative as implemented by the U.S. Department of Labor's Employment & Training Administration. All references to non-governmental companies or organizations, their services, products, or resources are offered for informational purposes and should not be construed as an endorsement by the Department of Labor. This product is copyrighted by the institution that created it and is intended for individual organizational, non-commercial use only.

In 2012, the curriculum was revised to add the Water Resources Unit, and then in 2016 the curriculum was again revised to add the Agriculture Mechanics Technician unit. All of these curriculum revisions were done through grants from the Wisconsin Department of Workforce Development to the Cooperative Educational Service Agency 6 (CESA 6).

Table of Contents

APPENDIX J: Required Skills

Unit 1: Core Skills

1. Apply academic knowledge
2. Apply career knowledge
3. Apply Agriculture, Food, and Natural Resources industry knowledge
4. Communicate effectively
5. Act professionally
6. Demonstrate customer service skills
7. Cooperate with others in a team setting
8. Think critically
9. Exhibit regulatory and ethical responsibilities
10. Use resources wisely
11. Use basic technology

Unit 2: Safety

1. Follow personal safety requirements
2. Maintain a safe work environment
3. Demonstrate professional role to be used in an emergency

APPENDIX K:

Unit 3: Animal Pathway: Animal Basics Unit

1. Clean and maintain animal quarters
2. Safely handle animals
3. Mix feed, additives and/or medicines
4. Manage animal waste
5. Observe and measure animal physical characteristics
6. Assist to examine animals
7. Collect samples for testing and/or food production
8. Maintain animal care and business records
9. Manage inventory
10. Evaluate the facility business and marketing plan

APPENDIX L:

Unit 4: Animal Pathway: Large Animal/Herd Unit

1. Clean and groom animals
2. Feed and water animals
3. Mark or tag animals
4. Herd and/or patrol/monitor animals
5. Monitor animal food and water supplies
6. Assist to optimize animal performance and production
7. Collect and process animal products and by-products
8. Assist with reproductive selection
9. Assist with reproductive breeding and/or birthing
10. Assist to prevent the spread of animal diseases
11. Operate equipment & machinery safely
12. Clean and service equipment & machinery

13. Maintain facilities

APPENDIX M:

Unit 5: Animal Pathway: Small Animal/Vet Assistant Unit

1. Manage clinic or research appointments
2. Set up area for animal exams & procedures
3. Clean & sterilize equipment
4. Maintain & QC diagnostic equipment
5. Assist to collect diagnostic samples
6. Run basic diagnostic tests
7. Assist to administer routine treatments, vaccines, and medications
8. Assist to prepare animals for surgery
9. Monitor animal responses to non-surgical procedures
10. Service customers and/or collect fees
11. Assist with animal euthanasia

APPENDIX N:

Unit 6: Plants Pathway: Plant Basics Unit

1. Prepare planting spaces
2. Prepare soils/media
3. Plant seeds, seedlings, or cuttings
4. Monitor plants for light, moisture, and temperature requirements
5. Assist to install and maintain watering and/or irrigation systems
6. Mix fertilizers and additives
7. Apply fertilizers
8. Manage inventory
9. Maintain agribusiness records
10. Evaluate the facility business and marketing plan

APPENDIX O:

Unit 7: Plants Pathway: Crops Unit

1. Assist to plan crop from rotation schedule
2. Till and test the soil
3. Plant crops
4. Assist to maintain and monitor crops
5. Assist to prevent the spread of weeds, pests, and diseases
6. Harvest crop product
7. Assist to transport and unload crop
8. Inspect, sort, and store product
9. Operate crop equipment & machinery safely
10. Clean and service equipment & machinery

APPENDIX P:

Unit 8: Plants Pathway: Greenhouse/Floral Unit

1. Service customers
2. Process sales
3. Assist to design crop plantings, displays, and/or floral arrangements
4. Implement crop planting plan
5. Assist to maintain and monitor crop plantings
6. Assist to prevent the spread of weeds, pests, and diseases

7. Perform sanitization procedures
8. Prepare, sort, and store products
9. Fill and package orders
10. Load product for sale, delivery, or further distribution
11. Assist to maintain facility & equipment
12. Sharpen hand tools

APPENDIX Q:

Unit 9: Plants Pathway: Landscaping Unit

1. Assist to evaluate landscaping site
2. Measure and prepare landscaping site
3. Test soil
4. Assist to create design
5. Prepare supplies and equipment
6. Remove waste materials and hardscaping
7. Install construction materials and hardscaping
8. Plant landscaping materials
9. Maintain landscaped spaces
10. Operate landscaping machinery safely
11. Assist to maintain landscaping facility & equipment
12. Sharpen hand tools

APPENDIX R:

Unit 10: Environmental Systems Pathway: Basic Water Resources Unit

1. Apply water industry knowledge
2. Read technical drawings & work orders
3. Monitor operating conditions, meters, & gauges
4. Collect operational data
5. Use operations software (SCADA, PLC, GIS/GPS, DBs)
6. Adjust basic operating conditions based on readings
7. Clean & maintain facility, tanks, filter beds, etc.
8. Treat &/or dispose of solids/sludge/scale
9. Clean & maintain lab equipment
10. Collect & store samples
11. Preserve chain of custody
12. Weigh & measure accurately
13. Perform calculations & conversions
14. Conduct basic lab testing
15. Operate tools & equipment safely
16. Monitor pumps & equipment for correct operation

APPENDIX S:

Unit 11: Environmental Systems Pathway: Advanced Water Resources Unit

1. Assist with reporting
2. Assist to evaluate security & public health operations
3. Assist with required inspections/audits
4. Assist to prepare chemicals

5. Assist to add chemical
6. Perform start-up & shut-down of pumps & equipment
7. Inspect operational equipment
8. Assist to troubleshoot operations
9. Prepare microscope slides
10. Operate a microscope
11. Identify microbes
12. Assist to analyze lab results
13. Maintain schedules, communication, & documentation
14. Perform preventive maintenance (PM)
15. Calibrate equipment
16. Assist to troubleshoot & repair equipment
17. Assist to analyze operational data for productivity/trends
18. Assist to record, summarize, & evaluate budget/usage/billing information
19. Participate in a system project

APPENDIX T:

Unit 12: Power, Structural & Technical Systems Pathway: Agriculture Mechanics Technician Unit

Competency:

1. Select correct hand tools and light duty power tools require for job
2. Demonstrate safe operation of hand tools, light duty power tools and stationary tools
3. Clean, organize and maintain work environment
4. Identify and demonstrate correct use of fasteners
5. Handle and store oils, grease, chemicals, cleaners, solvents, etc., according to the Materials Data Safety Data Sheet (M)SDS
6. Assist with proper engine, testing and maintenance
7. Demonstrate safe practices and procedures in the operation, maintenance and repair of engines and equipment
8. Assist in the pre-inspection of equipment components
9. Assist with the setup of equipment and machinery
10. Connect software to equipment and retrieve diagnostic trouble
11. Check fluid levels and lubricate machinery and equipment according to manufacturer specifications
12. Maintain vehicle and machinery appearance and cleanliness prior to inspection delivery
13. Prepare and complete written documentation of work performed and parts used
14. Look up parts
15. Demonstrate proper use of specific diagnostic tools
16. Weld and cut metal using an oxyacetylene torch and plasma arc torch
17. Read and interpret hydraulic symbols and flow on a schematic drawing
18. Apply basic knowledge of hydraulics to service maintenance
19. Assist with inspection and diagnosis of hydraulic components
20. Assist with the maintenance and repair of system components
21. Interpret electrical symbols and wiring schematics
22. Apply basic electrical theory
23. Assist with repair of failed components and/or repair wiring
24. Assist with inspection and diagnosis of electrical/electronic components
25. Assist with the maintenance and repair of electrical/electronic components

- 26.** Assist with troubleshooting and installation of instrumentation and data acquisition system (e.g., Global Positioning System (GPS), spraying, planting, harvesting monitors, etc.)
- 27.** Assist to dismantle defective machines and equipment
- 28.** Assist with reassembly of machines and equipment
- 29.** Assist with calibration, metering, monitoring and sensing equipment