

MINNESOTA PIPELINE PROJECT

PRIVATE INVESTMENT, PUBLIC EDUCATION LABOR AND INDUSTRY EXPERIENCE

AGRICULTURE OCCUPATIONS

Mechanic, Industrial Truck – Mechanics for Industrial Truck Maintenance and Repair inspect, repair, or overhaul agricultural machines with gasoline or diesel engines.

Industry-Sector Technical Competencies

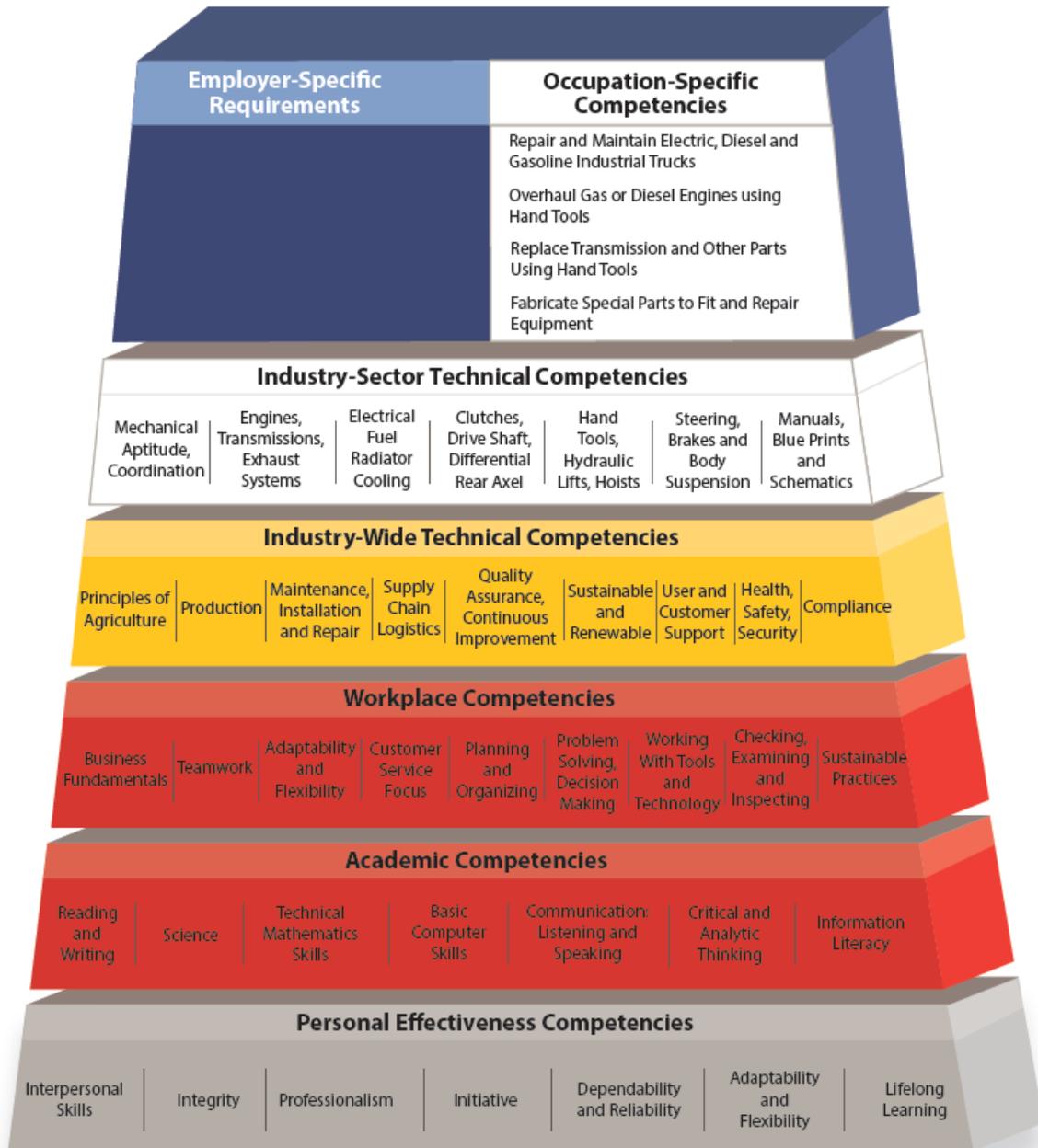
- Mechanical Aptitude & Coordination – Ability to understand how machines work and possess the physical coordination and dexterity to use tools.
- Engines, Transmissions, Exhaust Systems – Training on how engines, transmissions and exhaust systems work on machinery and how to maintain and repair them.
- Electrical Fuel Radiator Cooling – Understand how engine cooling systems work and how to maintain, repair and replace them.
- Clutches, Drive Shaft, Differential Rear Axle – Training on how to maintain, repair and replace clutches, drive shafts, and differential rear axles.
- Hand Tools, Hydraulic Lifts, Hoists – Knowledge on how to safely use hand tools, lifts and hoists while working on machinery.
- Steering, Brakes and Body Suspension – Training on how to maintain, repair and replace steering, brakes and body suspension systems.
- Manuals, Blueprints and Schematics – Understand how to read technical information found in manuals, blueprints and schematics relating to the machinery.

Occupation-Specific Competencies

- Industrial Truck Repair and Maintenance – Demonstrate understanding of how to maintain and repair industrial truck engines and machinery.
- Industrial Truck Engine Overhaul – Demonstrate process of overhauling an industrial engine.
- Engine Part Replacement – Ability to properly install replacement parts on machinery.
- Special Part Fabrication – Demonstrate fabricating special parts when required.

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Competency Model for Agricultural Occupation: Mechanic, Industrial Truck



Based on: Truck Mechanics and Diesel Engine Specialists: Competency Model Employment and Training Administration, United States Department of Labor

Mechanic, Industrial Truck Occupational Competency Training Plan

Related Instruction means an organized and systematic form of instruction designed to provide the apprentice with the knowledge of the theoretical and technical subjects related to the apprentice's trade of occupation, or industrial courses or, when of equivalent value, by correspondence, electronic media, or other forms or self-study approved by the commissioner.

	Course	Course Description	Credit/Non-Credit	Hours Spent on Competency
	Mechanical Aptitude, Coordination			
	Engines, Transmissions, Exhaust Systems			
	Electrical Fuel Radiator Cooling			
	Clutches, Drive Shaft, Differential Rear Axel			
	Hand Tools, Hydraulic Lifts, Hoists			
	Steering, Brakes and Body Suspension			
	Manuals, Blue Prints and Schematics			

On-The-Job Training is the work experience and instruction. Training experience need not be in the exact order as listed below.

	Trainer/Instructor	Name of person responsible for verifying competency mastery	Hours spent on competency
	Repair and Maintain Electric, Diesel and Gasoline Industrial Trucks		
	Overhaul Gas or Diesel Engines using Hand Tools		
	Replace Transmission and Other Parts Using Hand Tools		
	Fabricate Special parts to Fit and Repair Equipment		

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PRIVATE INVESTMENT, PUBLIC EDUCATION LABOR AND INDUSTRY EXPERIENCE

Agronomist – An agronomist is a person trained in agronomy, works in the agricultural sector, gives advice on the cultivation of crops, and deals with the plant growth. This person usually works with agricultural product companies and agricultural cooperatives.

Industry-Sector Technical Competencies

- Plant Genetics – Knowledge of the fundamental processes controlling production, quality and enhanced use for crops.
- Water Optimization/Drought Strategies – Understand maximizing water usage and conservation methods in drought situations.
- Soil Science/Conservation – Training in soil as a natural resource and principles of resource conservation management.
- Pest Management – Understand principles of crop protection and pest control.
- Crop Production Services – Training to assist farmers/growers with crop production.
- Crop Nutrient Principles – Knowledge of nutrients required for healthy, productive crops.
- Weed Control – Understanding of the tools available for weed control.
- Crop Disease – Training to reduce the economic and aesthetic damage caused by plant diseases.
- Sales Techniques – Fundamentals of sales focused on the agricultural industry.

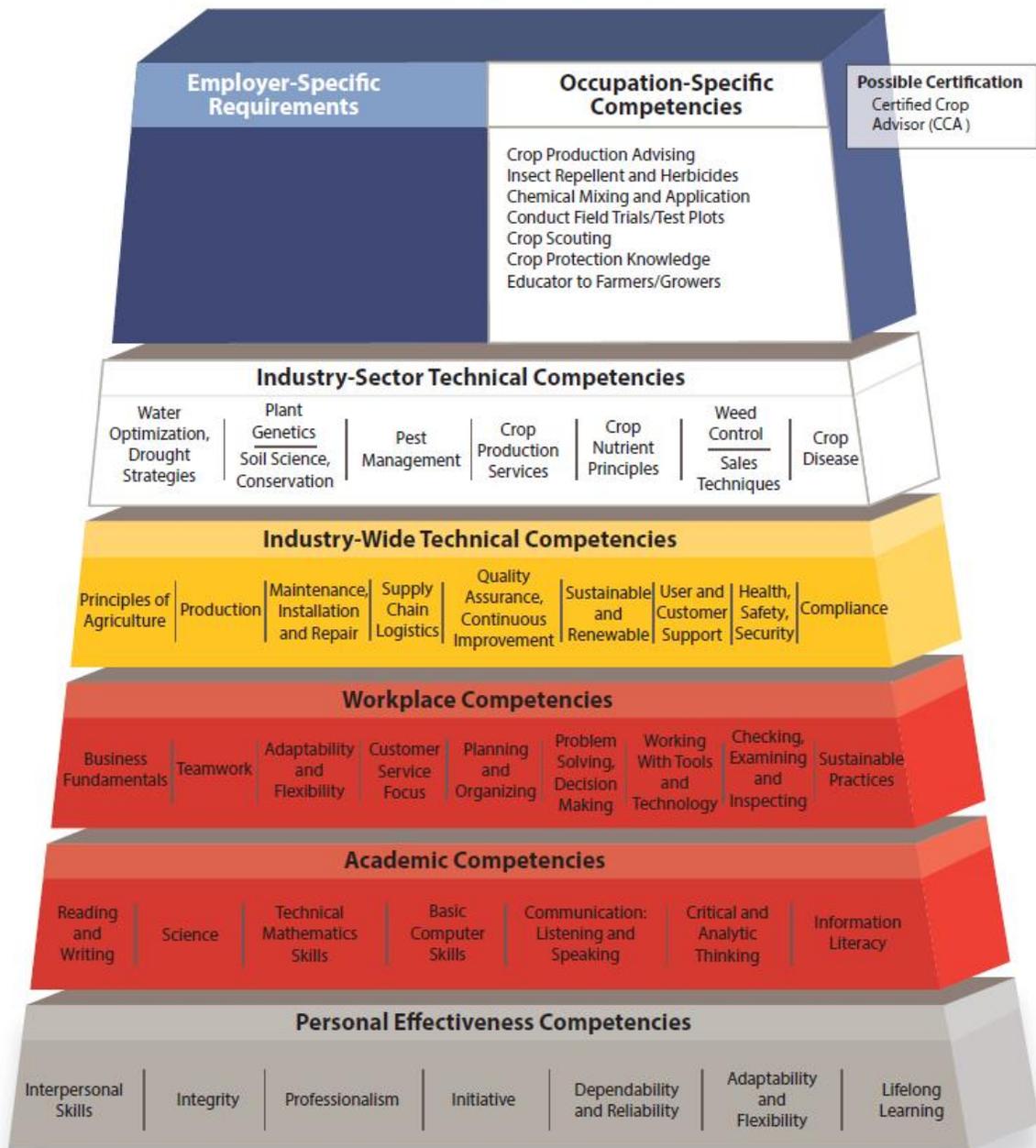
Occupation-Specific Competencies

- Crop Production Advising – Ability to counsel growers in various aspects of crop production.
- Insect Repellent and Herbicides – Select and recognize proper application methods for insect repellents and herbicides.
- Chemical Mixing and Application – Safely mix and apply chemicals to crops.
- Conduct Field Trials/Test Plots – Use scientific methodology when conducting field trials and evaluating test plots.
- Crop Scouting – Assess crop performance and pest pressure to evaluate economic risk from pest infestations and disease, as well as to determine the potential effectiveness of pest and disease control interventions.
- Crop Protection Knowledge – Use crop protection knowledge to advise farmers/growers on how to use seeds, fertilizers, herbicides, insecticides, fungicides and other products for maximum results.

- Farmer/Grower Education – Serve as an educator for the grower community on crops, hybrids, varieties, resource management and other factors affecting crop production.
Possible Certification – Certified Crop Advisor (CCA)

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Competency Model for Agricultural Occupation: Agronomist



Based on: Agricultural Industry Council input and feedback and modifications from the United States Department of Labor competency model.

Agronomist Occupational Competency Training Plan

Related Instruction means an organized and systematic form of instruction designed to provide the apprentice with the knowledge of the theoretical and technical subjects related to the apprentice's trade of occupation, or industrial courses or, when of equivalent value, by correspondence, electronic media, or other forms or self-study approved by the commissioner.

	Course	Course Description	Credit/Non-Credit	Hours Spent on Competency
	Water Optimization, Drought Strategies			
	Plant Genetics			
	Soil Science/Conservation			
	Pest Management			
	Crop Production Services			
	Crop Nutrient Principles			
	Weed Control			
	Sales Techniques			
	Crop Disease			

On-The-Job Training is the work experience and instruction. Training experience need not be in the exact order as listed below.

	Trainer/Instructor	Name of person responsible for verifying competency mastery	Hours spent on competency
	Crop Production Advising		
	Insect Repellent and Herbicides		
	Chemical Mixing and Application		
	Conduct Field Trials/Test Plots		
	Crop Scouting		
	Crop Protection Knowledge		
	Educator to Farmers/Growers		

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PRIVATE INVESTMENT, PUBLIC EDUCATION LABOR AND INDUSTRY EXPERIENCE

Occupational Competency Summary

Swine Manager – A Swine Manager is one who leads a team in the processes of caring for and administering to sows and piglets to assure optimum productivity. Swine Managers are often responsible for all aspects of animal care, facility repair and maintenance at the site.

Industry-Sector Technical Competencies

- Record Keeping – Knowledge of record keeping procedures regarding production, economics and herb issue troubleshooting.
- Employee Management/Training – Understand employee management principles and training techniques.
- Animal Genetics – Training on animal genetics and how to manipulate breeding to create improved herds.
- Herdsman Skills – Knowledge of skills required of a herdsman.
- Animal Science – Understanding of the science and business of producing domestic livestock species.
- Animal Quarters Maintenance – Knowledge of principles used in the upkeep and maintenance of animal living space.
- Animal Husbandry – Understanding of the care and breeding of domestic livestock.
- Marketing – Knowledge of the principles of marketing livestock products.

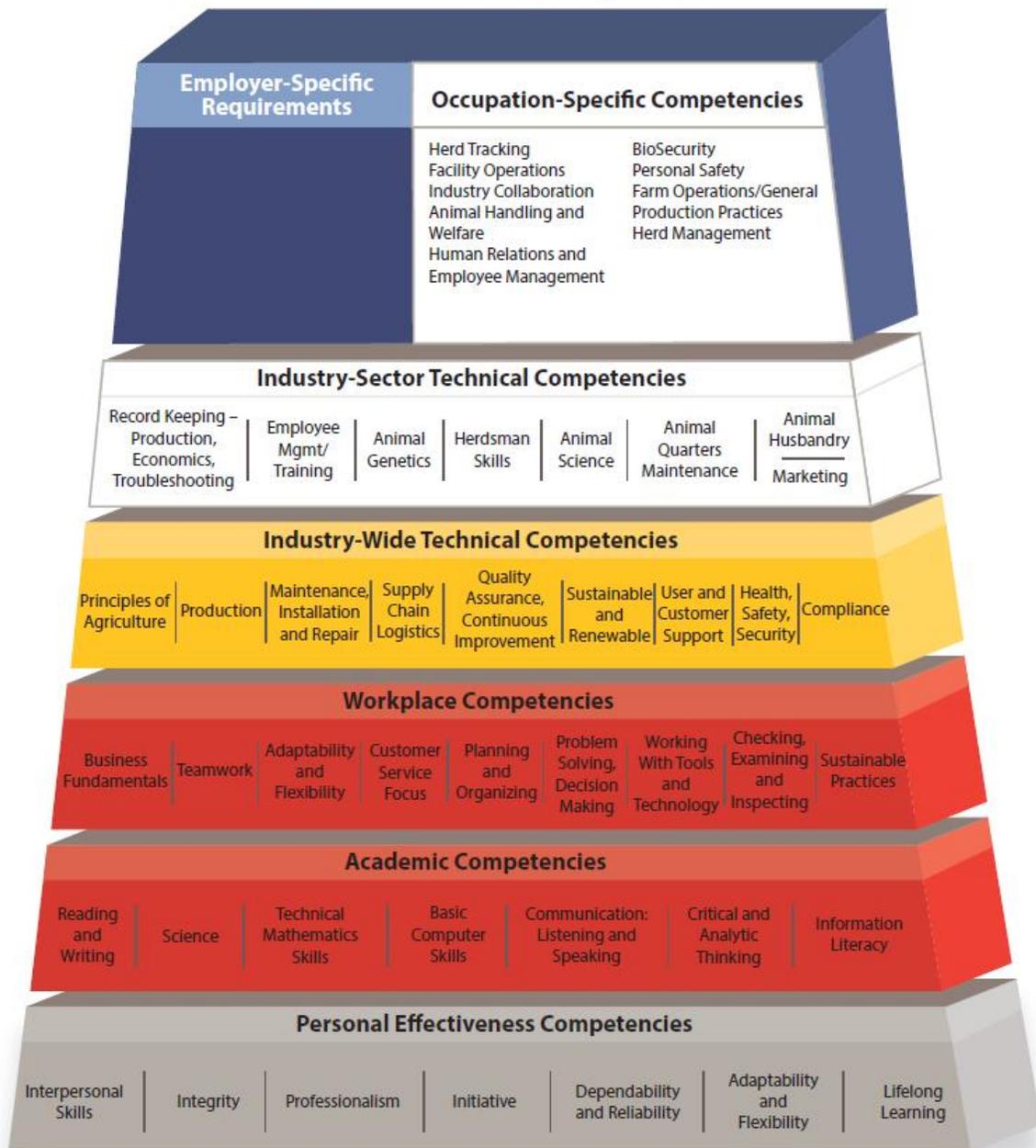
Occupation-Specific Competencies

- Herd Tracking – Ability to use tools to track herd information.
- Facility Operations – Management of all systems and controls of the facility including ventilation, feeding and watering.
- Industry Collaboration – Introduction to opportunities to collaborate with other businesses within the agricultural industry.
- Personal Safety – Ability to use proper industry standards to maintain a safe work environment to ensure personal well-being.
- Food Production/Nutrition – Awareness of livestock food production and essential nutrition.
- Animal Handling & Welfare – Ability to properly handle livestock with attention to their welfare.

- Human Relations and Employee Management – Understanding of proper human relations and managing staff.
- Biosecurity – Knowledge of procedures intended to protect livestock animals against disease or harmful biological agents
- Farm Operations/General Production Practices – Awareness of general farm and animal production practices and the operations required for successful farm business.
- Herd Management – Use sound management techniques to track livestock in regards to performance, inventory, and prevent costly mistakes.

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Competency Model for Agricultural Occupation: Swine Manager



Based on: Competency Model for Employment and Training Administration, United States Department of Labor.

Swine Manager Occupational Competency Training Plan

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	Course	Course Description	Credit/Non-Credit	Hours Spent on Competency
	Record Keeping – Production, Economics, Troubleshooting			
	Employee Management and Training			
	Animal Genetics			
	Herdsman Skills			
	Animal Science			
	Animal Quarters Maintenance			
	Animal Husbandry			
	Marketing			

On-The-Job Training is the work experience and instruction. Training experience need not be in the exact order as listed below.

	Trainer/Instructor	Name of person responsible for verifying competency mastery	Hours spent on competency
	Herd Tracking		
	Facility Operations – Ventilation, Feeding & Watering Systems and Controls		
	Industry Collaboration		
	Personal Safety		
	Food Production/Nutrition		
	Animal Handling & Welfare		
	Human Relations and Employee Management		
	Biosecurity		

Farm Operations / General Productions Practices			
Herd Management			

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PRIVATE INVESTMENT, PUBLIC EDUCATION LABOR AND INDUSTRY EXPERIENCE

Occupational Competency Summary

Swine Technician (Grow Finish) – A Swine Technician is one who assists in providing all daily aspects of animal care, specializing in grow finish operation.

Industry-Sector Technical Competencies

- Food Standard Operating Procedures – Understanding of proper procedures for animal feeding.
- Employee/Contractor Performance Management Training/Development – Understand the theory behind employee management principles and training techniques.
- Herd Tracking – Knowledge of skills and tools used for tracking individual animals and animals as a herd.
- Herd Management – Exposure to the science and business of producing domestic livestock species.
- Animal Movement Production – Knowledge of principles regarding safe and healthy movement of a herd.
- Employee/Contractor Training – Understanding of working with a variety of employees/contractors involved in swine production.
- Employee/Contractor Performance Management – Knowledge of important factors to monitor in working with an extensive group of employees/contractors.
- Feed Maintenance – Attention to quality control of feed and minimizing health risks for the herd.

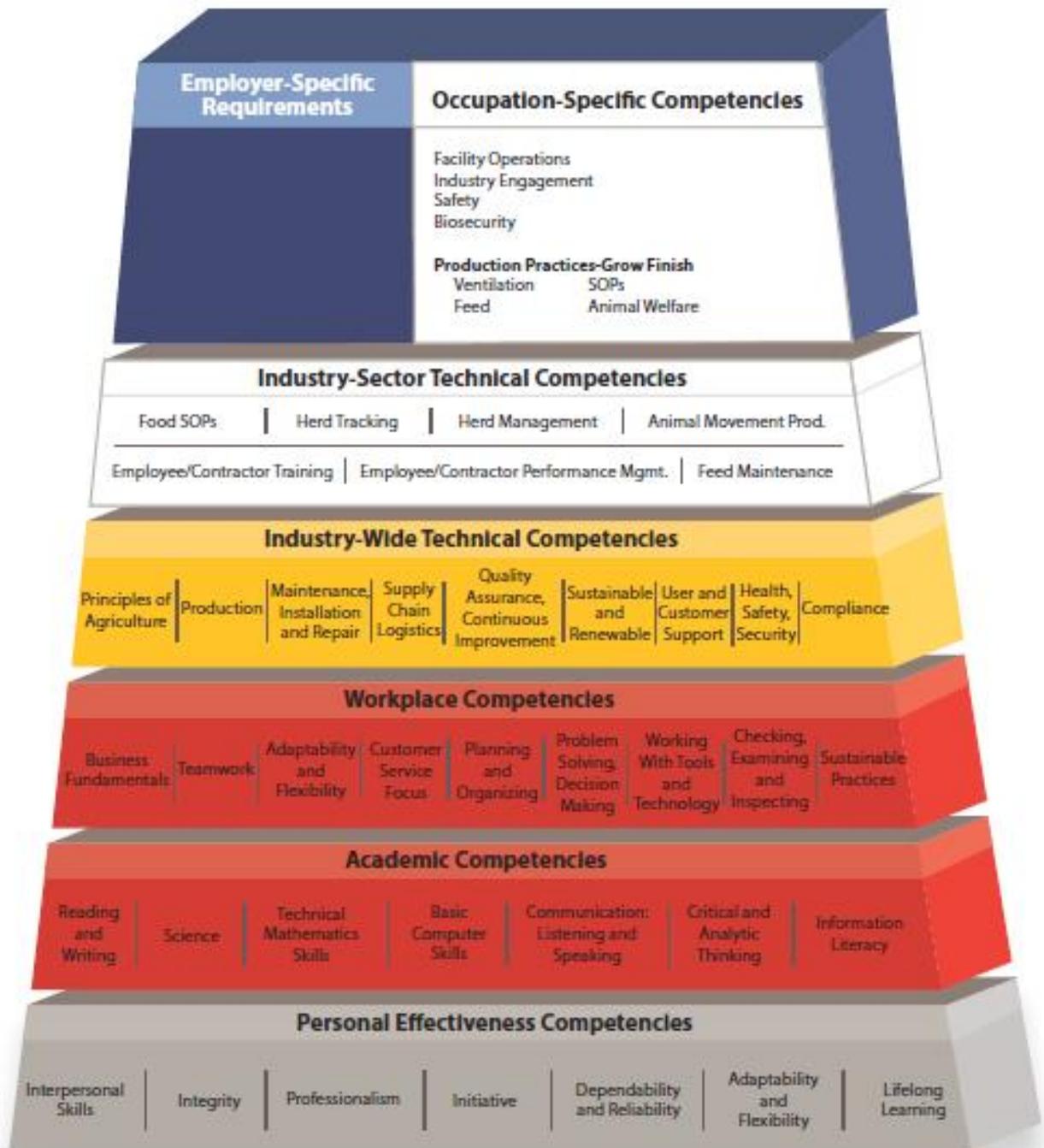
Occupation-Specific Competencies

- Facility Operations – Management of all systems and controls of the facility including ventilation, feeding and watering.
- Industry Engagement – Introduction to opportunities to engage with other businesses within the agricultural industry.
- Safety – Ability to use proper industry standards to maintain a safe work environment to ensure personal well-being.
- Biosecurity – Knowledge of procedures intended to protect livestock animals against disease or harmful biological agents

- **Production Practices – Grow Finish**
 - Ventilation – Understanding of importance or and the ability to manage systems to maintain proper ventilation of facility.
 - Feed – Awareness of livestock feeding procedures and essential nutrition.
 - Animal Welfare – Ability to properly handle livestock with attention to their welfare.
 - Standard Operating Procedures – Knowledge of operating procedures for the facility and herd management.

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Competency Model for Agricultural Occupation: Swine Technician (Grow Finish)



Based on: Competency Model for Employment and Training Administration, United States Department of Labor.

Swine Technician (Grow Finish) Occupational Competency Training Plan

Related Instruction means an organized and systematic form of instruction designed to provide the apprentice with the knowledge of the theoretical and technical subjects related to the apprentice's trade of occupation, or industrial courses or, when of equivalent value, by correspondence, electronic media, or other forms or self-study approved by the commissioner.

	Course	Course Description	Credit/Non-Credit	Hours Spent on Competency
Animal Housing				
Herd Tracking				
Herd Management				
Animal Movement Production				
Employee/Contractor Training				
Employee/Contractor Performance Management				
Feed Maintenance				

On-The-Job Training is the work experience and instruction. Training experience need not be in the exact order as listed below.

	Trainer/Instructor	Name of person responsible for verifying competency mastery	Hours spent on competency
Facility Operations			
Industry Engagement			
Safety			
Biosecurity			
Production Practices: Ventilation, Animal Welfare, Feed, SOPs			

MINNESOTA PIPELINE PROJECT

PRIVATE INVESTMENT, PUBLIC EDUCATION LABOR AND INDUSTRY EXPERIENCE

Occupational Competency Summary

Swine Technician (Sow Farm) – A Swine Technician is one who assists in providing all daily aspects of animal care, specializing in sow farm operation.

Industry-Sector Technical Competencies

- Food Standard Operating Procedures – Understanding of proper procedures for animal feeding.
- Employee/Contractor Performance Management Training/Development – Understand the theory behind employee management principles and training techniques.
- Herd Tracking – Knowledge of skills and tools used for tracking individual animals and animals as a herd.
- Herd Management – Exposure to the science and business of producing domestic livestock species.
- Animal Movement Production – Knowledge of principles regarding safe and healthy movement of a herd.
- Employee/Contractor Training – Understanding of working with a variety of employees/contractors involved in swine production.
- Employee/Contractor Performance Management – Knowledge of important factors to monitor in working with an extensive group of employees/contractors.
- Feed Maintenance – Attention to quality control of feed and minimizing health risks for the herd.

Occupation-Specific Competencies

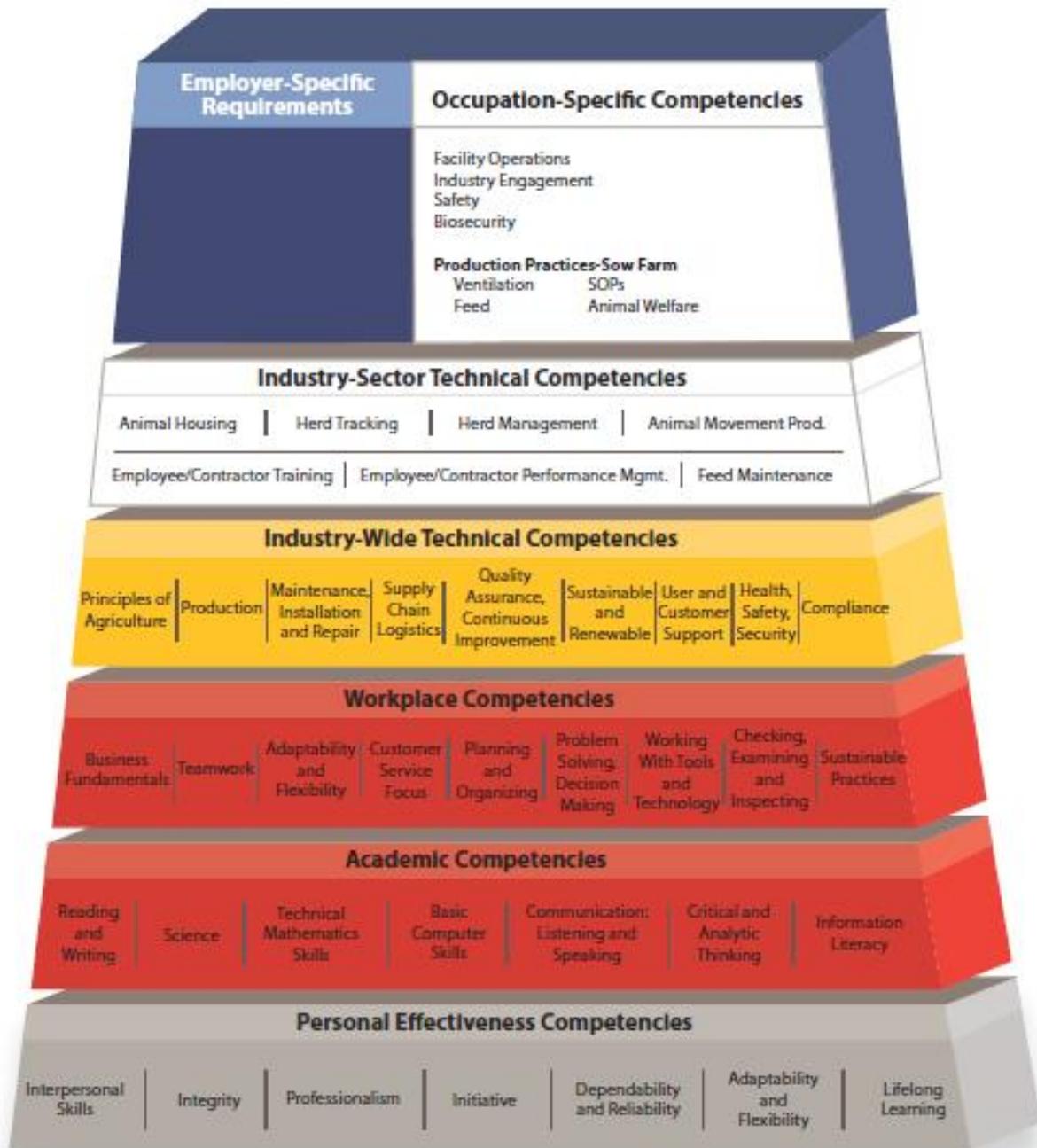
- Facility Operations – Management of all systems and controls of the facility including ventilation, feeding and watering.
- Industry Engagement – Introduction to opportunities to engage with other businesses within the agricultural industry.
- Safety – Ability to use proper industry standards to maintain a safe work environment to ensure personal well-being.
- Biosecurity – Knowledge of procedures intended to protect livestock animals against disease or harmful biological agents

- **Production Practices – Sow Farm**

- Ventilation – Understanding of importance or and the ability to manage systems to maintain proper ventilation of facility.
- Feed – Awareness of livestock feeding procedures and essential nutrition.
- Animal Welfare – Ability to properly handle livestock with attention to their welfare.
- Standard Operating Procedures – Knowledge of operating procedures for the facility and herd management.

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Competency Model for Agricultural Occupation: Swine Technician (Sow Farm)



Based on: Competency Model for Employment and Training Administration, United States Department of Labor.

Swine Technician (Sow Farm) Occupational Competency Training Plan

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	Herd Tracking			
	Herd Management			
	Animal Movement Production			
	Employee/Contractor Training			
	Employee/Contractor Performance Management			
	Feed Maintenance			

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	Facility Operations		
	Industry Engagement		
	Safety		
	Biosecurity		
	Production Practices: Ventilation, Animal Welfare, Feed, SOPs		

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PRIVATE INVESTMENT, PUBLIC EDUCATION LABOR AND INDUSTRY EXPERIENCE

Quality Assurance/Food Safety Supervisor – This position is responsible for the proper, productive and safe fitting and joining of metal and various components/parts together with select welding processes and procedures within a manufacturing environment.

Industry-Sector Technical Competencies

- Food Safety - Understand theory and implementation practices of HACCP.
- Food Sanitation – Knowledge of sanitation procedures from contamination in all functions and operations of a facility
- Food Processing Microbiology– Understand the theory of microbiology related to the food processing environment.
- Training/Adult Learning - Understand how to effectively train and present material to adult learners.
- Documentation – Understand theory and principals of documentation and document control procedures.
- Critical Thinking Theories – Understand theory and principals of key critical thinking theories, such as Root Cause Analysis, and Gap Analysis.
- Food Security/Bio Security - Awareness of processes for prevention and preparedness to maximize food security against tampering, whether natural, inadvertent or intentional.
- Food Science/R & D – Understanding of food science principles and provide technical support for research and development.
- Quality Management – Understand and implement GMPPS’s per BRC CFR 21 and Foreign Material Control.
- Root Cause Analysis – Knowledge of this method of problem solving used for identifying the root causes of faults or problems.
- Management Principles – Understand management theories related to management, leadership and team building.
- Food Law – Knowledge of laws surrounding food production and oversee the production facility to ensure compliance.

On-The-Job Training Competencies

- HACCP Review/Monitoring – Demonstrate understanding of Hazard Analysis Critical Control Point (HACCP) management system and ability to review associated company production practices to ensure conformance.
- Audit Manufacturing Practices/ Facility Sanitation – Ability to conduct audits on manufacturing practices and facility sanitation procedures.

- Maintain Quality Management System – Oversee data and policies related the quality management.
- Maintain Facility Cleaning Programs – Oversee all aspects of the production facility’s cleaning programs.
- Maintain Food Defense Plan – review and revise Food Defense Plan based on a plants changing conditions or process changes.
- Coordinate Food Safety and Quality Training – Responsible for coordinating and, at times, conducting safety and quality training for facility employees.
- Manage Customer Complaints – As needed, field customer complaints and address quality issues.
- Investigate Quality Issues – Conduct investigations into product quality issues and manage resolution actions.
- Traceability – Ability to verify the history, location and application of components of the manufacturing process, as well as products.
- Understand Processing, Lab Equipment and Product – Demonstrate understanding of facility processing and lab equipment, as well as final products.

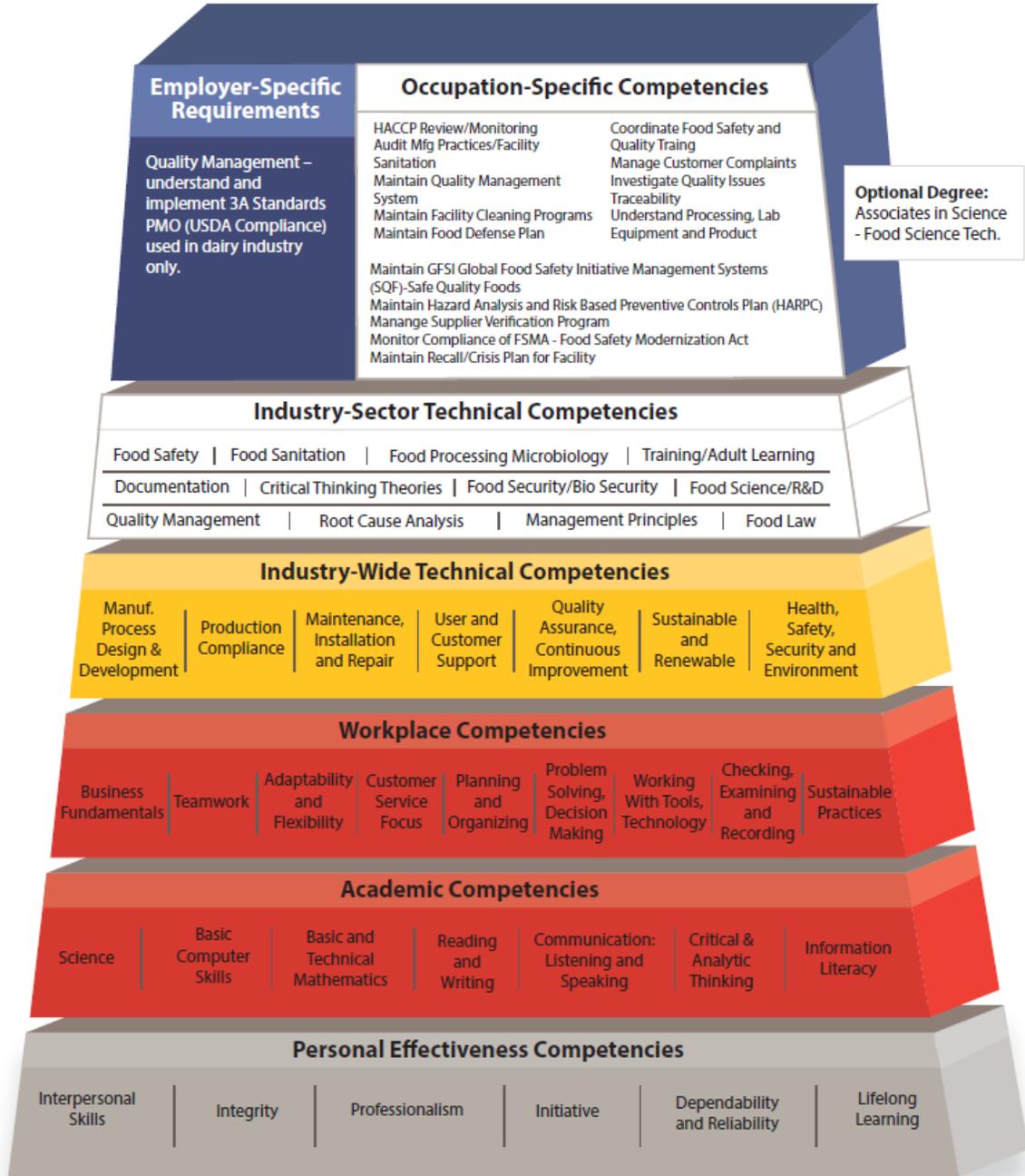
Employer-Specific Requirements:

Quality Management – understand and implement 3A Standards P.M.O. (USDA Compliance) used in dairy industry only.

Minnesota Apprenticeship Initiative

Competency Model for Advanced Manufacturing

Occupation: Quality Assurance/Food Safety Supervisor



Based on: Advanced Manufacturing Competency Model Employment and Training Administration, United States Department of Labor, April 2010.

Quality Assurance/Food Safety Supervisor Occupational Competency Training Plan

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	Food Safety			
	Food Sanitation			
	Food Processing Microbiology			
	Training/Adult Learning			
	Documentation			
	Critical Thinking Theories			
	Food Security/Bio Security			
	Food Science/R & D			
	Quality Management			
	Root Cause Analysis			
	Management Principles			
	Food Law			

On-The-Job Training is the work experience and instruction. Training experience need not be in the exact order as listed below.

	Trainer/Instructor	Name of person responsible for verifying competency mastery	Hours spent on competency
	HACCP Review/Monitoring		
	Audit Manufacturing Practices/ Facility Sanitation		
	Maintain Quality Management System		
	Maintain Facility Cleaning Programs		

Maintain Food Defense Plan			
Coordinate Food Safety and Quality Training			
Manage Customer Complaints			
Investigate Quality Issues			
Traceability			
Understand Processing, Lab Equipment and Product			